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THE TAXATION OF PROPERTY AND INCOME IN MASSACHUSETTS

SUMMARY

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I

In principle the general property tax was established in Massachusetts by the well-known law of 1634 which provided that in all "rates and public charges" the towns should tax everyone according to his estate and with reference to "all other his abilities whatsoever." The first detailed tax law, enacted in 1646, established a system of taxation upon "visible estate" real and personal, supplemented by a tax upon incomes of laborers, artificers and others, which in time developed into a tax upon incomes not derived from property. With these levies upon estates and incomes went the poll tax which had existed in the colony from the very beginning. The act of 1646, therefore, definitely established a system of direct taxation upon property, income, and polls, which continued in operation without fundamental changes until 1862, and for the most part lasted until the twentieth century.

The operation of this tax system in the seventeenth century has been exhaustively studied by Professor Day,[1] who finds that it was customary to levy upon polls from 35 to 40 per cent of the direct taxes imposed for colonial and local purposes. In some communities the proportion was frequently greater than this, sometimes rising to 50 and even 60 per cent of the tax levy. Property, therefore, paid but 60 or 65 per cent of the direct taxes, and sometimes contributed 50 per cent or less.

Until the very end of the century the property tax was confined to *visible* estates, which term, however, probably included money. In practice this meant that land, buildings, and live stock accounted for nearly the whole of the assessments. Since land values were low and there were few expensive buildings in the colony, the proportion of the taxes falling upon live stock was very heavy. Professor Day finds that such property often accounted for one-half, two-thirds, and even three-fourths of the whole assessment placed upon estates, with the result that personalty frequently paid a larger proportion of the taxes than did realty. It may be estimated roughtly that of every £100 of direct taxes levied in a representative Massachusetts town in the seventeenth century, some £35 to £40 was levied upon polls, and that the remaining £60 to £65 was contributed by real estate and live stock in proportions which varied but may not have been very unequal.[1] Personal property other than live stock constituted in most towns an unimportant part of the assessment, and incomes usually were a negligible factor.

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[1] E. E. Day, History of the General Property Tax in Massachusetts, 1630–1688. (Unpublished thesis, in Harvard University Library.)

The eighteenth century brought new conditions which gradually wrought material changes in the practical operation of the tax system. The proportion of direct taxation falling upon polls slightly decreased, since it became the general rule to levy one-third of the direct taxes upon polls and two-thirds upon property. Peculiar conditions sometimes made the poll taxes considerably higher or a little lower than this figure, but in the average town conditions probably conformed pretty closely to the intention of the law.

The great change, however, was the advance of real estate to a commanding position upon the tax rolls. The frontier of settlement had been pushed forward into the Connecticut valley, and eastern Massachusetts was becoming a fairly populous and prosperous community. Land values were rising, and houses better than American architects ordinarily produced in the nineteenth century were becoming common. As a result, the assessed value of real estate steadily rose, and personal property became of much less relative importance. In 1792, the assessment placed upon realty was £713,600, that upon personalty was £144,400, while property " doomed " by the assessors, which was largely personalty, was assessed at £81,100. If we assume all the " doomed " property to be personalty, we may compute that personal property accounted for 24 per cent of the total assessment and real estate for 76 per cent.[2] Since one-third of the direct taxes was levied upon polls, we may compute that of every £100 of taxes levied in a Massachusetts town, £33⅓ fell upon polls, £50⅔ fell upon real estate, and £16 fell upon personalty, including income which was almost everywhere a negligible factor.

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[1] In Boston, for instance, Day finds that in 1676 real estate accounted for 62 per cent of the total assessment of property, while in 1687 personalty accounted for 53 per cent.

[2] See Wolcott's Report on Direct Taxes. State Papers, Finance, vol. i, p. 451.

Wolcott's Report enables us to divide the £144,400 of property recorded as personalty into its component parts. Of this sum £66,300 represented live stock, £42,600 represented other tangible personalty, and £35,500 intangibles. What the £81,100 of "doomed" personalty consisted of, we can only conjecture; but we may believe that it was composed chiefly of merchants' stocks, money at interest and other intangibles, and perhaps incomes. In considering these figures it should be remembered that at this time property was placed upon the assessment roll at 6 per cent of its true value, with the exception of unimproved real estate, which was assessed at 2 per cent.

Money was, doubtless, included in the visible estates, for which inhabitants of Massachusetts were taxable in the seventeenth century. At the very end of that period money at interest is mentioned by the annual tax acts, and during the eighteenth century intangible property became subject to taxation. When corporations developed, their shares were taxable, like other personalty; but, as a gentle reminder to local assessors, the tax act for 1793 specifically mentioned bank stock. During the next decade shares of bridge or turnpike companies and other moneyed corporations received similar mention. The commercial development of the state was greatly increasing the amount and the importance of this class of property, and the growth of a considerable body of public securities at the same period tended to the same result. In 1790, Massachusetts had merchant princes whose fortunes were counted by the hundred thousands, and in some cases approached the figure of $1,000,000. The money made in commerce soon overflowed into banking and manufacturing, and into bridge, turnpike, and canal companies, with the result that the amount of intangible personal property rapidly increased.[1]

II

From 1800 to 1850 the financial problems confronting Massachusetts were few and comparatively simple. When the Federal government in 1790 assumed the greater part of the state debt, the burden of state taxation was reduced to an almost nominal figure.[2] By 1850 conditions had somewhat changed, but the pressure of taxation was still comparatively light. In Boston the tax rate for that year was $6.80, and this figure was probably not far from the average for the state at large. In interpreting these figures it is necessary to consider the further fact that real estate assessments were undoubtedly at a lower percentage of the true value than they are at the present day. While the matter has not been fully investigated, such evidence as we have indicates that in the average city or town prior to 1860 realty was probably not assessed at more than 50 per cent of its true value.

Under such conditions an easy-going administration of the tax laws sufficed to place a substantial amount of personal property upon the assessment rolls. In Boston in 1794 over 57 per cent of the assessment appears to have consisted of personal property. In 1810 the proportion of personalty was over 45 per cent, in 1822 it was over 44 per cent, and as late as 1860 it was nearly 41 per cent. The per capita assessment of personal property in Boston was approximately $540 in 1804, and $635 in 1860. For the state at large no figures are yet available between the years 1792, when we have Wolcott's Report, and 1850, when we have the figures of the United States Census. In the former year, as we have seen, if the property " doomed " by the assessors is counted as personal, 24 per cent of the total assessment consisted of personalty. In 1850 the Census figures showed a total assessment of $551,000,000 of which nearly $202,000,000 was personal property, the percentage of personalty being 36.6. It appears, therefore, that between 1792 and 1850, at the time when intangible property first became an important factor in Massachusetts, the proportion which personal property bore to the total assessment rose from 24 to 36.6 per cent.

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[1] This period is being exhaustively studied by Dr. H. H. Burbank, and will be treated in his book dealing with the history of the general property tax in Massachusetts since 1775.

[2] I have treated this subject in my monograph upon The Finances and Financial Policy of Massachusetts, chs. 2–4. The local governments were as yet undertaking few new functions so that their expenses were comparatively light. The result was that the pressure of taxation was light and the general property tax met fairly well the requirements of the period. In Boston the tax levy of 1820 amounted to no more than $3.60 per capita, and the tax rate was but $3.50. In 1840, after Boston had been a city for eighteen years and had greatly increased her expenditures, the tax levy was but $6.30 per capita and the tax rate $5.50.

What proportion of the increased assessment of personalty consisted of intangibles and what proportion consisted of merchants' stocks, machinery, live stock, and the very important item of ships and vessels, has not yet been ascertained. It may be that intangible property accounted for only a small part of the increase; but so far as our present knowledge goes, we can say that there is no evidence that it was the growth of intangible property in Massachusetts which broke down the general property tax. Upon the contrary, during the period when intangibles became an important factor in the situation, the assessment of personal property showed both an absolute and relative increase. With low tax rates the assessors succeeded in reaching a sufficient amount of personal property to account for 40 per cent of the total assessments during the period.

An important change in the distribution of the whole tax burden occurred in 1814 when the proportion of direct taxes assessed upon polls was reduced to one-sixth of the total levies. In 1850 we may estimate[1] that of every $100 of local taxation, $16.67 was levied upon polls, $52.80 was levied upon real estate, and $30.50 was levied upon personal property and income, the latter still being a negligible factor. If these figures are compared with those computed for 1792, it will be seen that the proportion which real estate formed of the total assessment had slightly increased, and that the decrease in the levy upon polls was made up chiefly by the increase in the assessment of personal property.

III

The twenty-four years following 1850 were the critical period in the history of the general property tax in Massachusetts. The tax had met fairly well the requirements of the first half of the nineteenth century, but proved wholly inadequate for subsequent needs. All the evidence justifies the conclusion that it was the increase of public expenditures which caused the breakdown.

The growth of cities, the emergence of new public needs, the unusual demands of the civil war, and the period of public and private extravagance which continued until the panic of 1873, combined to produce an unprecedented increase in expenditures. The outlay of the state government was $566,100 in 1850, while in 1860 it had increased to $1,193,000, and in 1868 had risen to $5,159,000. Thereafter it decreased to some extent, but at the end of a period of severe retrenchment stood at $3,907,000 in 1880. Local expenditures followed the same general course. For 1850 no data are available, but we know that in 1861 the taxes levied upon property in Massachusetts amounted to $7,145,000, and that by 1874 they had risen to $27,830,000. The total taxes of all descriptions levied in the Commonwealth amounted to $8,284,000 in the former year and to $33,674,000 in the latter; while the per capita tax burden had risen from $6.69 to $20.87.[1] To make the situation worse, both state and local debts had shown a portentous increase, so that interest and sinking fund charges were certain to complicate the financial problem of the future.

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[1] If the bank tax, which yielded the state $354,700 in 1850, were added to the local taxes, the proportion of personal property in the total would be increased by perhaps six or seven dollars. But as we have no data concerning the taxes raised for local purposes, no accurate calculation can be made on this point.

The only possible result was a sharp increase of tax rates. In Boston the rate advanced from $6.80 per $1000 in 1850 to $9.30 in 1860 and to $15.60 in 1874. In the entire state the average tax rate, which was $8.29 in 1861, was $15.18 in 1874. The strain of such high rates was greater than the existing system could possibly endure, and therefore taxation immediately became a " problem " in Massachusetts.

One of the first readjustments required in the tax laws was a reduction of the poll tax. Since 1829 the law had provided that one-sixth of the state tax should be assessed upon polls, and that the same proportion should be followed in local taxes, provided, however, that the total poll tax levy for city, town, and county purposes should not exceed $1.50. If one-sixth of the heavy taxes levied for state purposes during the civil war had been levied upon polls, and the assessments for local purposes had approximated $1.50, the aggregate poll taxes would have risen to high figures. Therefore in 1862 it was enacted that the aggregate poll tax for all purposes, state and local, should not exceed $2, with a possible exception in the case of highway taxes separately assessed. Even under this law the poll tax, which in 1861 had averaged $1.62, increased to $2.50 and $3.00 in many towns in 1864 and 1865; while such a rate as $4.25 was reported in one instance. For the entire state the average poll tax in 1865 was $2.11. With the tax limited in this manner, increases in local taxation thereafter fell wholly upon property; and the poll tax became a factor of decreasing importance.

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[1] These figures may be found in The Finances and Financial Policy of Massachusetts, pp. 46, 63, and 135.

The principal change that occurred during this period was the introduction of an extensive system of corporation taxes. In 1812, Massachusetts had imposed a tax of one per cent upon the capital stock of state banks, and twenty years later had levied a retaliatory tax upon the agents of foreign insurance companies chartered in states that taxed the agents of Massachusetts companies. The bank tax soon yielded a handsome revenue, and was the mainstay of the state's finances during the civil war. It seems to have been looked upon as a tax upon the privilege of issuing notes, since the shares of the banks remained taxable in the hands of the stockholders. The insurance taxes never produced enough revenue to make them of financial significance. Up to 1862 Massachusetts had made no fundamental departure from the general property tax; and, except for comparatively unimportant exemptions, all property was subject to local taxation.

But in the year just mentioned a law was enacted which exempted from taxation deposits in savings banks, and then imposed upon the banks themselves an excise tax of one-half of one per cent. Altho this rate was subsequently increased, then reduced, then increased, and finally restored to the original figure, it was always less than the average rate imposed upon other property in Massachusetts; and as local tax rates increased, it finally fell to less than one-third of the average rate of taxation. It therefore established a separate classification for savings bank deposits, justified no doubt upon the theory that such property was entitled to special consideration, but marking none the less a deliberate departure from the principle of the general property tax. It also raised interesting and important constitutional questions.

The earliest tax laws of the colony of Massachusetts had been based upon the English system of local taxation. That system had been based upon the principle of equal, proportionable, and ratable taxation according to the abilities of the citizens, but had not always employed the same measure of ability.[1] The earliest Massachusetts tax laws provided in almost identical language for equal and proportionable rating of the inhabitants of Massachusetts, and selected visible estates as the measure of the citizens' contributions. It, therefore, naturally happened that the province charter of 1691 contained a provision authorizing the general court to levy "proportionable and reasonable assessments, rates, and taxes." What the word "proportionable" meant to the person who inserted it in the charter, we do not know; but we do know that the word was never so construed as to prevent the province from classifying property for taxation. On the contrary, the provincial tax laws repeatedly classified property and continued to do so down to the time of the revolution. Real estate was usually required to be assessed at six times the annual income. Live stock was assessed at arbitrary valuations fixed by law, and other personal property practically according to the judgment and discretion of the assessors.

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[1] Cannan's History of Local Rates in England gives sufficient evidence concerning the sources upon which the authors of the earliest Massachusetts laws drew.

The constitution adopted by Massachusetts in 1780 took over from the provincial charter the provision that the general court should have the power to levy "proportional and reasonable assessments, rates and taxes." If it had stopped there, it might never have been so construed as to prevent classification of the objects of taxation, because the colony and province had always levied excise and import duties, and the state continued to do so. It would probably have been evident to any court that the framers of the constitution had not intended to invalidate the existing system of excise and customs taxes, and it is therefore unlikely that the constitutional requirement that taxes shall be "proportional" would have been construed so strictly as to make excise and customs duties unconstitutional. But after conferring upon the general court the same taxing power that the province of Massachusetts had always exercised, the framers of the constitution inserted an additional provision authorizing the levy of "reasonable duties and excises." This action may have been due to a fear or belief that, without specific authorization of duties and excises, the general court might be unable to levy such imposts. But this caution was probably unnecessary. The taxation system of Massachusetts had never been proportional in any mathematical sense, and it had always included excise and customs duties, to which it would have been practically impossible to apply any requirement of proportionality. The excise clause, therefore, was probably unnecessary, and could have no other effect than to oblige the courts to find a reason for the inclusion of the word "proportional" in the clause relating to direct taxes and for its exclusion from the clause relating to duties and excises.

Whatever the framers may have intended, the second tax act [1] enacted after the adoption of the constitution, provided that all property except unimproved lands should be assessed at 6 per cent of its real value, and that such lands should be assessed at 2 per cent. This was obviously a classification of property, and it continued to be the law of the Commonwealth until its repeal in 1828 without any question being raised concerning its constitutionality. Another law of 1781[2] levied a duty upon coaches, chariots, and carriages, and required the inhabitants of the Commonwealth under oath to make returns of such property to the local assessors. This was in everything except name a direct tax upon property, and could not have been upheld as an excise or duty except under such a broad construction of those terms as to render meaningless the distinction between the taxing power and the excise power. It also passed without question.

The meaning of the word "proportional" was considered by the Supreme Court for the first time in the case of Portland Bank *v.* Apthorp (12 Mass. 252), which involved the constitutionality of the tax levied upon state banks in 1812. The court upheld this tax as an excise, but took occasion to say that it could not be sustained as a tax because it was not proportional. Altho this was a mere dictum, it inevitably carried great weight fifty years later when the next case arose; and yet if the dictum of the court was correct, it followed that the province of Massachusetts had never had anything remotely resembling a proportional system of taxation, and that the legislature of the state only a year after the adoption of the constitution had established an unconstitutional classification of real estate which was still in force, and under the guise of an excise had levied an unconstitutional tax upon certain other classes of property.

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[1] Ch. 16 of 1781.

[2] Ch. 17 of 1781.

When the savings bank tax came up for consideration, the court, following the reasoning of Portland Bank *v.* Apthorp, upheld it[1] as an excise or duty on the franchises of the banks, even tho, unlike the bank tax of 1812, it was in lieu of local taxation of the deposits. The earlier decision had merely upheld an excise that was in addition to the property tax. The latter, however, made it possible for the legislature, wherever it could levy a valid excise, to exempt from local taxation the property which in effect had been excised. The door was opened, therefore, for a considerable extension of the excise power, and the legislature soon took advantage of the opportunity. Another important effect of the decision was to commit the court to the general line of reasoning followed in the earlier case, and to make it probable that, if the question ever arose, the dictum laid down in Portland Bank *v.* Apthorp would become a decision to the effect that a tax, in order to be constitutional, must be proportional in the strictest sense of that word.

Cases involving this question were not long in coming before the court, and it was presently held that the constitution required taxes on property to be so laid that, " taking ' all the estates lying within the Commonwealth ' as one of the elements of proportion, each taxpayer should be obliged to bear only such part of the general burden as the property owned by him bore to the whole sum to be raised."[2] Thus the tax clause of the constitution was finally interpreted in such a manner as to make it prescribe strict uniformity in taxation.

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[1] 5 Allen, 428, 431, and 433.

[2] Oliver v. Washington Mills, 11 Allen 275. See also 12 Allen 298 and 312; 118 Mass. 386; 133 Mass. 161; 134 Mass. 424; 195 Mass. 607.

In 1864, the general corporation tax was enacted, and, like the savings bank tax, was sustained by the court as a valid excise. As is well known, it left the real estate and machinery of corporations subject to local taxation, and then imposed upon corporations a franchise tax which was to be assessed upon the so-called "corporate excess," or the amount by which the value of the capital stock exceeded the value of the real estate and machinery locally assessed. As the shares of the corporations were thereafter exempt from local taxation and the corporation tax was administered by the state, the law of 1864 introduced another radical change in the tax system of Massachusetts. But since the rate of taxation on the corporate excess was the average rate levied upon property in the Commonwealth, the law involved no departure from the principle of the general property tax, and in this respect differed radically from the tax on savings banks. Except for the arrangement by which double taxation of the stock and of certain tangible property of corporations was avoided,[1] the only real change wrought by the law of 1864 was that thereafter the state dealt directly with corporations and the stockholders were exempted from local taxation. The change effected, therefore, was chiefly of an administrative character, and there was no intention that corporations should pay either more or less taxes than the general mass of property subject to local taxation.

The establishment of the national banking system was followed by the conversion of state into national banks, and this required changes in the tax law. The final outcome was the establishment in 1873 of the present tax upon the shares of national banks, which, being levied at the local rates of taxation, results theoretically in taxing banks in the same manner as other property. In 1874, therefore, Massachusetts was collecting from the savings bank, the general corporation, and the national bank taxes $4,875,000 of revenue, which was over seven times the revenue derived from the old bank tax in 1861. The system had begun to be diversified, but except in the case of savings banks no departure had been made from the principle of the general property tax.

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[1] Manufacturing corporations had been relieved from double taxation in 1832 by a law (ch. 158 of 1832) which provided that, in assessing the stock of such corporations, the local assessors should make a suitable deduction for the value of real estate and machinery already taxed.

Without doubt the new taxes were more effective in reaching corporate property than the old methods of local assessment, so that perhaps the greater part of the revenue derived therefrom in 1874 represented an increase of financial resources. But this increase had not been sufficient, as we have seen, to prevent a rise of local tax rates under which conditions were rapidly going from bad to worse.

Boston was probably the first and also the chief sufferer. Mr. Thomas Hills, an able and determined advocate of the general property tax, was made one of the principal assessors in 1865, and in 1866 became chairman of the board. He increased greatly the efficiency of the assessing department, and inaugurated a vigorous search for taxable property under which Boston valuations rapidly increased. In 1860, the real estate of the city had been assessed at $163,891,000, and the personal property at $112,969,000. In 1865, these figures had been increased, respectively, to $201,628,000 and $170,263,000. By 1870, Mr. Hills had raised the real estate assessment to $365,593,000 and the personal to $218,496,000; and in 1872, had raised the former to $443,283,000 and the latter to $239,440,000. Account must be taken, of course, of the annexation of Roxbury and Dorchester, which added materially to the total valuation; but even when this is done, the results secured by Mr. Hills were sufficiently striking.

But things were not working out as expected because personal property was rapidly migrating from Boston. Removals to the suburbs had been going on for many years, as is evidenced by the fact that before the middle of the eighteenth century it was necessary to amend the tax laws by providing that merchandise employed in any city or town should be taxable in that city and not at the domicile of the merchant. But under Mr. Hills there ensured a veritable hegira under which the attractive surburbs of Boston were rapidly build up at the expense of the city's tax rolls. The most striking case was that of Nahant, which in 1865 had assessed $513,000 of real property and $12,710 of personal, its tax rate standing at $15 per $1000. In 1870, however, thanks to Mr. Hills, its realty was assessed at $985,000, and its personalty at $4,160,000, while its tax rate had dropped to $2.50 per $1000. Between 1869 and 1873 not less than $13,900,000 of taxable personal estate was removed from Boston to eight suburban towns and to Newport, Rhode Island. Naturally enough, in time, such removals more than offset the diligence of Mr. Hills and his minions. The assessment of personal property reached high water mark in 1874 when it stood at $244,554,000. Thereafter it steadily decreased until it reached low water mark in 1879 at $184,545,000. But even in 1874 Mr. Hills had failed to increase the proportion of the taxes paid by personal property. In 1860, personalty constituted over 40 per cent of the total assessment, and in 1865 formed even a larger percentage. But in 1874, altho the total personal assessment had increased by some $74,000,000, the assessment of real estate had been raised 175 per cent, with the result that personal property formed less than 31 per cent of the total assessment.

In the entire state, as we have seen, personal property had constituted over 36 per cent of the local assessments of $551,000,000 in 1850. By 1874, however, it accounted for 29.6 per cent of the total assessment of $1,831,600,000. Allowance should be made for the fact that the savings bank, the general corporation, and the national bank taxes had removed a large amount of property from the category of "taxables," but only a small proportion of such property had ever been placed upon the assessment lists, and therefore the corporation taxes made comparatively little difference with the local assessments. In 1861, for instance, the deposits in the savings banks of Massachusetts amounted to $44,785,000, and of this sum the local assessors had taxed only $9,655,000. No similar comprehensive data concerning local taxation of the stock of Massachusetts corporations and of national banks are available; but in 1864 when, under the operation of the general corporation tax, the shares of Massachusetts corporations were exempted from taxation, the local assessments upon personal property decreased only from $343,500,000 to $324,600,000. In 1873, also, when the bank tax went into operation, the local assessments upon personal property decreased from $565,294,000 to $537,388,000. While, therefore, the total assessment of personal property for local taxation in 1874 would have been somewhat larger but for the changes wrought by the new corporation taxes, there had been a gradual shifting of taxation from personalty to real estate. Even if we estimate the reductions caused by the corporation taxes at the very generous figure of $70,000,000, there would still remain a shrinkage of some 2 per cent in the proportion which personal property bore to the total local assessments. For a time, however, this tendency was probably offset by the fact that the new corporation taxes succeeded in reaching taxable values which would have eluded local assessment.

Since the poll tax was now fixed at what was practically a uniform charge of $2.00, the burden of taxation had shifted very greatly from polls to property. In 1874, polls were assessed for $877,700 in a total of $33,556,000, or for no more than 2½ per cent, which contrasts strikingly with the proportion of 16⅔ per cent established by the law of 1814.[1] The taxes paid by corporations amounted to $4,875,000 in 1874, and constituted 14½ per cent of the total. Local taxes upon personal property amounted to $8,229,000, or 24.6 per cent; and those assessed upon real estate were $19,573,000, or 58.4 per cent. Thus it appears that the reduction in the proportion of the taxes falling upon polls had been made up by the new corporation taxes; polls and corporations were paying in 1874 fully 17 per cent of the total taxes, whereas polls were required to contribute 16⅔ per cent under the law of 1814, and somewhat less than that under the law of 1829. But the corporation taxes were in effect taxes levied upon property, so that what the figures really show is that the proportion of the total taxes falling upon property had increased from 83⅓ per cent in the early part of the nineteenth century to 97½ per cent in the year 1874.

If we assume that the whole of the corporation taxes were levied in respect of personal property,[2] and therefore combine them with the taxes levied locally upon personalty, we find that the total contribution of personal property was $13,105,000, or 39.1 per cent of all the taxes levied in the Commonwealth. This left 58.4 per cent of the total taxes to be paid by real estate. Compared with 1850, therefore, we find that the contribution of personal property to the total public revenue, state and local, had increased to 39.1 per cent, while the contribution of real estate had increased to 58.4 per cent.

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[1] Of course the limitation placed by the Act of 1829 upon the local levy on polls tended to reduce appreciably the proportion of the total taxes falling upon polls, but up to 1850 the increase in the amount of taxes levied had probably not been sufficient to reduce the poll tax to a negligible factor.

[2] In fact some part of the general corporation tax represented real estate values, since, under a decision of the Supreme Court, the right of way of railroads and some other classes of public service corporations is exempt from local taxation. This decision had relieved such property from taxation up to 1864, but after that it merely increased the taxable corporate excess upon which the general corporation tax was levied. See Quarterly Journal of Economics, vol. xxi, pp. 185 and 218.

IV

Following the critical period which ended in 1874, came thirty-three years of comparative calm during which disintegration of the general property tax gradually and quietly continued. In 1874, dissatisfaction with the working of the tax laws led to the appointment of the first special commission to investigate the subject. This commission was composed of able men and submitted in January, 1875, a report that is replete with information. It was, however, dominated in its thought by Mr. Hills, who seems to have been the most influential as well as the most active member. The report recognizes existing evils, but does not understand their cause. It assails vigorously the proposal, made by the New York tax commission of 1871, to exempt personal property from taxation, and recommends merely changes in various details of the tax laws. For the evils attending the taxation of personal property the commission could make no more hopeful recommendations than that certain changes be made in the provisions of the law relating to offsets for indebtedness and the matter of domicile.[1] It was unfortunate for the Commonwealth that its tax laws could not be radically altered in 1875, but the principle of the general property tax was undoubtedly approved by all but a small minority, and that minority had little more to propose than exemption measures designed to relieve certain kinds of personal property from taxation. All things considered, it seems probable that Mr. Hills and his associates voiced very faithfully the prevailing opinion of the state.

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[1] Report of the Commissioners Appointed to Inquire into the Expediency of Revising and Amending the Laws Relating to Taxation and Exemption, 101, 121. H. Doc. 15 of 1875.

In the years that followed, discussion of tax problems was confined principally to the subject of double taxation. An organized effort was made to bring about the exemption of mortgages secured by Massachusetts real estate; and this was practically accomplished in 1881, when the present law upon that subject was enacted. Under that act a note secured by a mortgage of taxable real estate in Massachusetts is exempt from taxation as personal property; and the interest of the mortgagee in the real estate is taxable to him as real estate in the place where the land lies, while the mortgagor is taxable only for his equity in the property. Since, however, the law does not prohibit contracting out, mortgages invariably provide that the mortgagor shall assume all taxes; and the practical result is that real estate is taxed to the mortgagor at its full value, while the mortgage note is exempt. This law had the effect of exempting from taxation about $48,000,000 of mortgage debts reported as assessed for taxation in 1881. But the assessment of personal property throughout the state decreased by only $3,600,000 in 1882, and the following year it was $6,900,000 larger than it had been before mortgages were exempted.[1]

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[1] These figures, as well as those given above concerning the operation of the corporation taxes, may be found on pp. 36–38 of the Report of the Commission on Taxation of 1907.

Advocates of the general property tax interpreted these figures as meaning that the loss of $48,000,000 of taxable mortgages was offset by the natural increase of other personal property, and reasoned as if the assessment for 1883 might have been not $6,900,000 but $54,900,000 greater than the assessment for 1881 if mortgages had not been exempt. In fact, however, things would not have worked out that way. The exemption of mortgages nominally relieved $48,000,000 of personal property from local taxation. But, in reality, very few of the owners of such property had previously been assessed for their entire personal estates as the law directed, or had made returns of their taxable property. Except in cases where a person's property consisted largely of mortgages and he could therefore make a return to his assessors that reduced his taxable personalty below the amount for which he was assessed in 1881, tax payers who had been " doomed " for a given amount of personal property in 1881 had no interest in coming forward in 1882 with statements of their taxable personalty. They were presumably assessed for as much personal estate as in 1881, and therefore received no benefit from the mortgage exemption. The situation was like that which developed later when, in order to encourage forestry, new plantations were exempted from taxation for a stated period of years. This exemption was of absolutely no benefit to the average farmer because his farm was usually assessed for somewhat less than it was worth and the assessors could add to the rest of the farm all that they were obliged to take off from the plantation. We are not to suppose, therefore, that, if mortgages had not been exempted in 1881, the assessment of personal property in 1883 would have increased by $54,900,000 instead of $6,900,000 as it actually did.

After 1881 few changes in the tax laws occurred for many years. Until 1906, indeed, the only significant development was the introduction, in 1891, of a tax upon collateral inheritances and successions. In point of fact, tax legislation in Massachusetts was in a state of deadlock.

Advocates of change, who were increasing in numbers, labored to secure the exemption of foreign corporation stocks, and sometimes urged the total exemption of all intangible property. Upon the other hand, the assessors of the state, who numbered considerably more than 1000, had been organized by Mr. Hills and others into a state-wide association which was able to offer determined resistance to any and all exemption measures.

Advocates of the existing system proposed various measures to make the tax laws more effective, of which the most important were the appointment of assessors by some state authority and the taxation of personal property at a uniform rate which should be the average imposed upon real estate subject to local taxation. Either of these measures would have wrought havoc to the state, since the time had passed when it was possible to enforce the taxation of personal property at the prevailing local rates or at an average state rate. Such taxation would have meant confiscation of one-third or one-fourth of the tax payers' incomes, and would have led to wholesale removals of property from Massachusetts. As things stood, the tax laws resulted in what was aptly described as a "system of confiscation tempered by favoritism." The legislature was not disposed to grant further exemptions that might increase the burdens falling upon taxable property; and, upon the other hand, it probably realized that the existing laws were not capable of strict enforcement, and therefore was not disposed to adopt the drastic measures favored by the assessors.

In 1893, a joint special committee of the legislature was appointed to revise the laws relating to taxation; and the following year reported against radical changes in the taxation of property.[1] But conditions were going from bad to worse, so that in 1896 a special commission was appointed to inquire into the expediency of revising the tax laws. The following year this commission submitted a noteworthy report which grappled squarely with the problem confronting the Commonwealth. It investigated searchingly the practical operation of the existing system, and recommended that intangible property be exempted from taxation. It realized, however, that a substitute or substitutes should be found for the tax upon intangibles, and therefore recommended that the inheritance tax should be extended to direct inheritances, and that a habitation tax should be introduced which should be levied upon house rentals in excess of $400.[2]

Altho this plan provided substitutes for the existing tax upon intangible property, the legislature was not ready for radical departures from the existing system, and therefore the recommendations of the commission bore no immediate fruit. But the report effectively exposed the evils of the existing system, and pointed out their cause. It therefore served as the starting-point for subsequent discussion, and proved to be a document of great educational value. In 1906, another joint-special committee on taxation was appointed which recommended no radical changes in the property tax but advocated the taxation of direct inheritances, which was finally carried into effect by an act of 1907.[1] A minority of the committee, reverting to the recommendations of the commission of 1896, advocated the exemption of intangible property from taxation but proposed no substitute.

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[1] Sen. Doc. 9 of 1894. The above statement relates to the majority of the committee. Minority reports favored the exemption of stock of foreign corporations and the exemption of state and municipal bonds.

[2] Report of the Commission Appointed to Inquire into the Expediency of Revising and Amending the Laws of the Commonwealth Relating to Taxation, 120 (Boston, 1897). The Commission also recommended that the state should retain in its treasury the revenue from the general corporation tax, and should then assume county expenses.

Meanwhile, the general property tax was steadily disintegrating and producing conditions which were certain to lead ultimately to revision of the tax laws. Public expenditures, which had greatly declined during the period of retrenchment following 1874, were again upon the increase. The total taxes of all descriptions levied in the Commonwealth had decreased from $33,674,000 in 1874 to $25,714,000 in 1879, but by 1890 they had risen to $39,731,000, and by 1905 had reached the imposing total of $72,121,000. The per capita tax burden, which in 1874 had been $20.87, in 1905 was $24.01, and local tax rates were again increasing. From 1874 to 1879, during the period of enforced economy, the average tax rate in the state had declined from $15.51 per $1000 to $12.78. During the next fifteen years the average hovered around $15, but by 1900 it had risen to $16.14, and in 1905 it stood at $17.25. Under such conditions the evils which were serious enough in 1874 were gradually becoming intolerable.

One result of the heavier pressure of taxation was an increase in real estate valuations, especially in the cities. The mere desire to obtain revenue without undue increase of tax rates would have led, in any event, to somewhat higher valuations; but this tendency was increased by the operation of the law of 1875 limiting city debts, and that of 1885 limiting city tax rates. Under these acts many cities were obliged to increase real estate valuations in order to provide the necessary margin for loans and to keep tax rates within the specified limit. If this had resulted merely in changing the old-fashioned practice of valuing property at "about" one-half or two-thirds of what it was worth, it would have been a matter for congratulation. But in some cities it finally resulted in valuations so high as to be clearly excessive. There are today within the metropolitan district not a few municipalities in which it is difficult to sell real estate for its assessed valuation and transfers are frequently made at much lower figures.

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[1] Report of the Joint-Special Committee on Taxation (Boston, 1907).

Tangible personal property was seriously affected by the high rates of taxation, but in many cases had a comparatively easy method of escape, namely, incorporation. Merchants and manufacturers who found themselves more heavily taxed upon their goods, wares, or merchandise than their competitors in other states could incorporate under the laws of the Commonwealth and come under the general corporation tax. Under this tax, real estate and machinery remained subject to local taxation, and the rest of the property of corporations was supposed to be fully reached by the tax which the state levied upon the so-called "corporate excess." In practice, however, it developed that whereas an individual or a firm was taxable upon all property without deduction of debts except against the item of credits, the corporation was able to deduct the whole of its indebtedness from its assets taxable under the corporation tax. This circumstance, with others, brought it about that in 1902 the manufacturing and mercantile companies subject to the corporation tax owned merchandise valued at $143,604,000, and had a taxable corporate excess of no more than $104,238,000. It is clear, therefore, that the effect of the corporation tax was even at that time to enable incorporated companies to reduce the tax upon their merchandise, or at any rate to reduce it below what it would be if the local assessors assessed it at its true value. In 1903, a maximum limit was placed upon the corporate excess, which had the effect of enabling many concerns to secure a further reduction of their taxes. While in individual cases the corporation tax was fully as heavy as the local tax upon unincorporated enterprises, and in some cases even heavier, there can be no doubt that, upon the whole, manufacturing and mercantile concerns found incorporation an easy method of escape from increasing burdens of local taxation.[1] In extreme cases it was possible to arrange matters so that an incorporated mercantile concern secured exemption from local taxation upon its merchandise, and then, after deducting its debts, had no corporate excess to be taxed by the state.

Other kinds of tangible personalty did not fare so well. Live stock is employed in an industry where incorporation is highly uncommon. Machinery is expressly excepted from the operation of the corporation tax, and is very heavily taxed in some localities. In textile centers it sometimes forms a very large percentage of the total valuation, as may be seen by looking at the assessments of personal property in such cities as Fall River and New Bedford.[2] In some cases it is supposed that manufacturers and assessors have working agreements under which machinery is assessed at a certain proportion of its actual value, and in other localities it is probable that machinery is taxed upon something less than a full valuation. But, upon the whole, it is reasonable to conclude that machinery is very heavily taxed in Massachusetts, and probably more heavily than in most other states.

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[1] The operation of the tax upon the corporate excess of manufacturing and mercantile companies is so complicated that it cannot be adequately treated in this paper. I may refer to my article upon the taxation of corporations in Massachusetts, published in the Quarterly Journal of Economics for February, 1907. The subject has been fully discussed in recent annual reports of the tax commissioner and in a special memorandum prepared for the legislative committee on taxation in May, 1916 (H. Doc. 2133 of 1916).

[2] Of a total valuation of \$106,691,000 in 1915, the personal property of Fall River accounted for \$42,707,000, or slightly over 40 per cent. In New Bedford, in the same year, out of a total valuation of \$111,346,000, personal property accounted for \$41,845,000, or approximately 37 per cent. These percentages are to be compared with an average of about 25 per cent in the total assessment in the state. Fall River and New Bedford do not tax very large amounts of intangible personal property, so that it is probable that the greater part of the taxable personalty in those cities consists of machinery.

Intangible personalty found several avenues of escape. In the first place, it tended more and more to leave communities where tax rates were high, and to concentrate in a number of attractive residential towns where taxpayers could virtually fix their own assessments. Between 1871 and 1891 not less than $75,000,000 of personal estates assessed in Boston through the diligence of Mr. Hills were removed to fifteen favorite towns. In the former year these towns had assessed $26,750,000 of personal property; in the latter their personal assessments had advanced to $52,558,000 — an increase of $25,808,000. Even if we assume that during the interval there had been no increase of personal property except the $75,000,000 gained by the removal of certain taxpayers from Boston, it would appear that the local assessors had taxed but one-third of these estates. In 1882, one town received an estate assessed in Boston at $800,000, and in the following year increased its assessment of personal property by no more than $281,000, but was able nevertheless to reduce its tax rate from $11 to $7 per $1000.[1]

In this connection it should be noticed that the method which the state followed in distributing among the cities and towns the revenue from the corporation and the bank taxes tended still further to give taxpayers the whip hand over the assessors. The general principle was to divide this revenue according to the residence of the stockholders;[1] and this brought it about that, when a wealthy taxpayer changed his residence, the town to which he removed received an increased share of the corporation and bank taxes. The result was that assessors knew that strict enforcement of the tax on intangible property would not only lead to the removal of such property to some other jurisdiction, but would decrease the amount of corporation and bank taxes received from the state treasury.

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[1] See Report of the Commission on Taxation (1908), pp. 45–46.

As years passed, the distribution of intangible property, and of the corporation and bank taxes, became more and more favorable to the wealthy towns. In 1865, before the process of concentration had begun, the fourteen wealthiest towns had derived a revenue of $6.87 per capita from local taxes on personal property and the corporation and bank taxes, while in the rest of the state the revenue from these sources amounted to $5.81. Twenty years later these fourteen towns were receiving $14.28 per capita, while the average for the rest of the state had fallen to $4.48. In 1905, the revenue of the fourteen towns had increased to $24.01 per capita, while that of the rest of the state amounted to $5.35, a trifle more than the figure for 1885 but materially less than the amount received in 1865. Somewhat similar conditions can doubtless be found in other states and countries, but it is probable that the student of taxation would have difficulty in finding elsewhere such extreme concentration of taxable resources as was gradually brought about in Massachusetts after 1865. The only possible result was the creation of inequalities by which the rates of taxation in the cities and industrial towns were greatly increased, while they were lowered to almost nominal figures in a handful of wealthy communities.[1]

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[1] In 1898, the first departure from this principle was made when it was provided that the tax paid by street railroads should be distributed among cities and towns where the tracks were located. Subsequently, the distribution of the tax on other corporations was modified in the interest of the industrial towns where such enterprises were located.

But overburdened taxpayers had still another method of escape; they could change their investments. Prior to 1862 this opportunity had not been open to them, since practically every form of investment was taxable. But when savings deposits were exempted from taxation, it was possible for people of means to make increased use of the savings banks. That this was done almost from the outset, there can be little doubt;[2] and it is certain that no small part of the very large deposits of Massachusetts savings banks today are held by people of means. Another door was opened by the great increase of the Federal debt during the civil war, which supplied investors with upward of two billions of non-taxable securities. The establishment of the corporation tax in 1864 placed the stocks of Massachusetts corporations in the list of so-called non-taxables. At first this may not have affected the situation, but in time there was created an artificial demand for tax-exempt stocks which were bought in large quantities by trustees and some others who were not in a position to change their domicile and could not well avoid making returns of personal property. The exemption of mortgages in 1881 created another class of untaxed investments, so that altogether a rather wide range of opportunities was open to persons acquainted with the provisions of the law.

In many cases untaxed securities were bought for permanent investment, so that no evasion of the tax laws was either contemplated or practised. But it was now possible to invest temporarily in non-taxables for the purpose of escaping assessment upon taxable securities. This could be done only a day or two before the date of assessment in any year, and there developed a regular spring demand for securities that could be held over assessment day and then returned to their former, — perhaps one might say actual — owners. In other cases the practice was different but the result the same. Comparatively few investors ordinarily made returns of their personal property, and intangibles were usually taxed by "doomage." This meant that assessors would begin with a small assessment, and then, if the taxpayer did not make a declaration of his property, would subsequently increase it. In time the assessment might reach a figure that would compel the taxpayer to seek relief, and this could be had by shifting his investments from taxables to non-taxables until he could make a full return of his personal property under oath. Such a statement would probably satisfy the curiosity of the assessors for a number of years, so that after making it the taxpayer could at the first favorable opportunity sell his non-taxables and reinvest in taxable securities. There has probably been comparatively little downright lying in the taxation of personal property in Massachusetts; perjury is an ugly thing, and the law did not make it necessary. Intangible property nevertheless managed to evade assessment, and could do so in many cases without change of the taxpayer's domicile.

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[1] This subject was first carefully studied by the Tax Commission appointed in 1896. See Report 63–68.

[2] See the Report of the Tax Commission appointed in 1874, p. 61 et seq.

The next result was that personal property paid a constantly decreasing proportion of the local taxes. In 1907, out of a total local assessment of $3,512,000,000 in the state of Massachusetts, personal property accounted for no more than $766,600,000, or 21.8 per cent; whereas in 1891 it had constituted 25.2 per cent of the total valuation, and in 1871 had constituted 33.8 per cent. At the end of this period it can be estimated that about half of the personal property actually taxed consisted of intangible personalty.[1]

In the distribution of the total burden of state and local taxation some changes had occurred since 1874. In 1907, polls were assessed for $1,758,000 of taxes, or 2.4 per cent of the entire amount. The tax, however, was not so easy to collect as in former years, and the actual contribution made by polls was somewhat less than the percentage just stated. Since 1874 the liquor license tax had come into operation, and this, with some minor business taxes, amounted in 1907 to $3,453,000, or 4.7 per cent. The collateral inheritance tax introduced in 1891 now yielded $772,000, or about one per cent of the total. The corporation taxes amounted to $9,761,000, or 13.2 per cent. The taxes levied locally upon personal property stood at $12,386,000, or 16.8 per cent; while those levied upon real estate amounted to $45,794,000, or 61.9 per cent. Comparison with the figures for 1874 shows that polls were assessed in 1907 for substantially the same proportion as in 1874, that personal property and corporations accounted for 30 per cent of the total against 39 per cent in the former year, and that real estate paid 61.9 per cent of the total taxes against 58.4 per cent at the beginning of the period. The net result was that the proportion of the taxes paid by personal property and corporations had decreased by some 9 per cent, and that this had been made up by business and inheritance taxes, which now contributed 5.7 per cent, and by an increase in the real estate taxes of something more than 3 per cent.

A new chapter in the history of taxation in Massachusetts opened in 1908. In the previous year the inheritance tax was extended to direct inheritances, and this brought the whole property of inhabitants of the state under review by the tax commissioner's department. Up to that time the local assessors had not infrequently gained information from probate returns. But since no tax was imposed upon direct inheritances, it was often possible for executors to avoid disclosing the amounts of probated estates, a request from all the heirs that no inventory be filed being sufficient to accomplish this end. With a direct inheritance tax in operation it was no longer possible to avoid filing inventories, and this fact alone would have altered materially taxation conditions in the Commonwealth.

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[1] See Report of Commission on Taxation (1908), pp. 40 and 67. Compare also the data found on pp. 50–51 of the Report of the Commission of 1896.

V

Another law enacted in 1908 hastened the inevitable crisis. The tax commissioner, in 1898, had been given certain supervisory powers over the local assessors,[1] and thus the first step had been taken toward the establishment of central control over the assessment of property. The commissioner, however, was given but a single assistant to carry on the work of supervision, and there was no direct inheritance tax which enforced the filing of inventories of all estates; so that prior to 1908 his supervisory power had not been effective enough to alter materially the situation. But in that year a law was enacted [2] by which the powers of the tax commissioner were extended, and he was authorized to appoint three supervisors of assessors to assist him in the performance of his new duties.

The act stopped short of authorizing him directly or through the supervisors to revise local assessments, and merely authorized him to direct the local authorities to assess property in the manner prescribed by law. In case local assessors failed to comply with such directions, the commissioner could merely notify the mayor of the city, or the selectmen of the town, of such failure, a provision which becomes almost humorous when one recalls that in many of the towns the selectmen are also the assessors. The tax commissioner was indeed authorized to cause an assessor guilty of any violation of law for which a penalty was imposed, to be prosecuted in the county courts, but for various reasons this did not meet the needs of the case. It therefore happened that in some instances the local officials refused to obey the directions of the commissioner; but in a majority of cases his recommendations met with substantial compliance, so that the Act of 1908 proved fairly effective. It at least created machinery by which information coming to the probate courts under the operation of the direct inheritance tax was systematically gathered by the supervisors of assessors and transmitted to the taxing authorities of the cities and towns. After 1907, therefore, the local taxing authorities were continually supplied with more information about taxable personalty than they had ever possessed before, and in some cases more than they desired to possess. Up to this time the general property tax had been undergoing a gradual process of disintegration; it might have lasted many years longer if no provision had been made for stricter enforcement. But the law of 1908 rapidly produced conditions under which a fundamental change in the system soon became inevitable.

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[1] Ch. 507 of 1898.

[2] Ch. 550 of 1908.

Another factor that contributed to the same result was the growth of private agencies for collecting and distributing information concerning the ownership of corporation stocks. Foreign corporations doing business in Massachusetts were required to file lists of their stockholders with the secretary of state, and these lists supplied a mine of interesting information. Others could sometimes be reached by examining lists filed in other states, or by purchasing a share of stock and then demanding the right to examine stock books. In recent years, therefore, Massachusetts assessors have been able to procure, if they desire it, a large amount of information concerning taxable corporation stocks; and the result has been a fuller assessment of such property than was formerly possible.

There naturally followed a substantial increase in local assessments of personal property. From $766,600,000 in 1907 the figures advanced to $930,817,000 in 1910, to $1,033,000,000 in 1912, and to $1,195,100,000 in 1915. During the entire period of eight years the total increase was $428,500,000, which was practically equal to the total increase in local assessments of personal property between 1861 and 1907. The following table shows the facts for significant years:

STATISTICS OF TOTAL AND PERSONAL PROPERTY ASSESSMENTS IN MASSACHUSETTS

Year	Total Valuation	Valuation of Personal Property	Percentage of Personal Property
1850	$551,106,000	$201,977,000	36.0
1861	861,500,000	309,400,000	35.9
1874	1,831,600,000	542,300,000	29.6
1881	1,642,200,000	498,300,000	30.2
1907	3,512,600,000	766,600,000	21.8
1915	4,769,900,000	1,195,100,000	25.1

It will be seen that, after declining for fifty-seven years, the proportion of personal property in the total valuations increased from 21.8 per cent in 1907 to 25.1 per cent in 1915. This was a substantial achievement for the supervisors of assessors, but its effect was not what was anticipated. In the first place, the property thus listed tended to disappear from the tax rolls in a comparatively short time through changes in investments or domicile. Prior to 1908 domiciliary changes had been mostly within the state, and the tax laws had probably driven little property out of Massachusetts, altho they had doubtless prevented a certain amount from coming here. But after that year removals became increasingly frequent, and presently threatened serious injury to the Commonwealth. Precise data on the subject are, of course, very difficult to obtain; but by 1914 it was estimated, and generally believed, that the property removed from Massachusetts in that year was not less than $100,000,000. Whatever the exact amount may have been, it was now large enough to attract public attention, and to affect materially the attitude of lawyers and bankers who were in a position to know what was going on.

The second natural result was to increase greatly the demand for non-taxable investments; and, inevitably, a greater demand began to create a greater supply. The manufacture of non-taxable preferred stocks of Massachusetts corporations became a regular industry; and, as was natural under the circumstances, some of the new securities proved to be of doubtful solidity. In 1907, the number of new corporations organized under the business corporation law was 1,234, having a total capital of $63,372,000. By 1912, the number of such corporations was 1,453, having a capital of $213,466,000. Thereafter there was somewhat less activity among promoters, but both the number of companies and the total capital remained much larger than had ever been known. In 1913, 1914, and 1915, the business corporations organized were, respectively, 1,504, 1,604, and 1,700; while the figures of the total capital were, respectively, $172,103,000, $123,211,000, and $113,-

509,000. Unfavorable business conditions may have been partly responsible for the decrease that followed 1912, but another probable cause was a growing distrust of the new securities.

A third result was to stimulate greatly migration to the favored residential towns. Whenever the assessors in the ordinary city or town, acting upon the information furnished by the supervisors, increased materially the assessment of personal property, some favored town immediately acquired new inhabitants. The average rate of taxation in the state was gradually increasing from about $17 per $1000, the figure for 1907, to $18, and finally $19. But in the wealthy residential towns tax rates were often less than $10 per $1000, and valuations were low. Such conditions could not be permanent.

Some of the developments in particular localities during this period deserve to be mentioned. The town of Norwood in 1908 had a tax rate of $26.50, and at that juncture the assessors received information concerning $2,000,000 of taxable estates, which amounted to more than one and one-half times the existing assessment upon personal property. If matters had taken the usual course, these estates would have been taxed for a sum that would have absorbed fully half of the income, and would presently have been removed from the town. But under exceptionally fortunate and able leadership Norwood decided to try to assess all property at its full value, and thereby reduce the rate of taxation to a tolerable figure which would not drive any citizen away. Accordingly, in 1909 the valuation of real estate was increased from $4,739,000 to $7,680,000, while that of personalty was raised from $1,361,000 to $6,118,000. This resulted in an increase of over 125 per cent in the total valuation, and, together with a reduction in the tax levy, reduced the rate of taxation to $8.50. For the moment the crisis was averted. But the tax rate was still higher than intangible property could bear permanently; and in subsequent years the assessment of personal property gradually declined, while, despite further increases in the valuation of realty, the tax rate began to increase. In 1915, the assessment upon personalty was half a million less than in 1909, while the tax rate had increased to $12.80. Norwood had shown that exceptional conditions might enable an industrial town to enforce the tax laws without inviting immediate disaster; but its subsequent experience demonstrates that not even such conditions will avail in the long run.

Stimulated by the example of Norwood or urged by the supervisors of assessors, a few other localities sought to enforce strictly the existing tax laws, but with very different results. The city of Malden in 1909 increased the assessment of personalty from $6,734,000 to $12,751,000, and reduced its tax rate from $19.20 to $15.70; but by 1912 the assessment of personalty had declined to $8,438,000, and the tax rate had returned to the figure for 1908. Meanwhile, a number of wealthy residents had changed their domicile, and the city had lost a substantial amount of revenue from corporation taxes. Between 1909 and 1911, the city of Quincy increased the assessment of personalty from $5,813,000 to $7,830,000, and reduced its tax rate from $20.40 to $19.50. But two years later the personal assessment had sunk to $6,254,000, while the tax rate had advanced to $23.70. Salem tried the same experiment between 1909 and 1912, increasing its personal assessment from $9,821,000 to $10,617,000, and reducing its tax rate from $18.60 to $18. But in 1913, nearly a million of personal property disappeared from the tax roll, and the tax rate advanced to $20.50. Such examples were sufficient to deter other localities from attempting to emulate the example of Norwood.

The other side of the picture may be seen by turning to some of the small residential towns. In 1908, Dover had assessed $470,000 of personal property and $931,000 of realty, and had a tax rate of $9.80. In the following year the assessment of personal property jumped to $4,296,000, and the tax rate fell to $4.30. This suddenly acquired wealth was thereafter retained, and, in fact, increased to $6,925,000 in 1914, in which year the tax rate was $5.50. The town of Rowley in 1912 assessed $170,000 of personal property, and had a tax rate of $13.00. But in the next year the assessment of personalty rose to $2,088,000, and the tax rate decreased to $5.50. Tho subsequently changes occurred, Rowley continued to tax a large amount of personalty, and remained in affluent circumstances.

The most striking case was that of the town of Orleans, which in 1910 had taxed $181,000 of personal property at a rate of $15 per $1000. The next year the assessment of this class of property increased to $968,000, and the tax rate fell to $3. With its reputation thus established, the town continued to increase its taxable wealth until in 1915 the valuation of personalty amounted to $3,941,000, and the tax rate was prevented from reaching the vanishing point only by liberal outlays for improvements. In this case corporation and bank taxes were an especially important factor in the situation. In 1910, Orleans had raised $10,259 from taxes upon property, and had received only $1,085 from the state treasury on account of corporation and bank taxes. In 1911, the levy upon property declined to $4,557, while the revenue from corporation and bank taxes increased to $10,302. In 1914, the taxes upon property had increased to $11,509, as a result of the inflow of personal estates, while the revenue drawn from the state treasury had risen to $24,883. In that year Orleans enjoyed a revenue of $37,108 from all sources, including polls, whereas in 1910 it had an income of $11,982.

In 1915, Orleans showed a tax rate of $3 per $1000, the lowest in the state, and seven other towns had tax rates that were less than $10; fifty-two towns showed rates ranging from $10 to $14.80; nine cities and one hundred forty-seven towns showed rates ranging from $15 to $19.90; while twenty-six cities and one hundred and eleven towns had rates that ranged from $20 to $30. These inequalities persisted in spite of certain changes in the distribution of the corporation taxes, by which the revenue from mercantile and manufacturing corporations was allotted to the localities where the plants were situated and business carried on. Further changes in the distribution of the corporation and bank taxes might improve somewhat the position of the cities and the ordinary agricultural or manufacturing towns, but the distribution of taxable personal property had become so unequal as to make the situation worse than it had been prior to the introduction of the direct inheritance tax and the enactment of the law creating supervisors of assessors. In 1905, the fourteen towns previously mentioned had received $24.01 of revenue per capita from corporation taxes and the local tax on personal property; while in the rest of the state the revenue was but $5.35 per capita. In 1915, the figures were, respectively, $29.50 and $7.54.[1] Nothing but a radical change in the laws relating to taxation held out any prospect of relief.

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[1] It is worth while to notice the changes that occurred over the whole period from 1865 to 1915. In the former year fourteen favored towns derived a per capita revenue of $6.87 from the stated sources, and the rest of the Commonwealth $5.81. In 1915, the figures were, respectively, $29.50 and $7.54. Thus the fourteen towns had gained $22.63, while the rest of the state had gained $1.73.

From 1907 to 1915 only slight changes occurred in the distribution of the total burden of taxation. Of the total of $112,280,000,[1] polls were assessed for $2,055,000, or 1.8 per cent, which is to be compared with 2.4 per cent for 1907. Liquor licenses and minor business taxes contributed $3,678,000, or 3.3 per cent, which is 1.4 per cent less than in the earlier year. Corporations paid $12,484,000, or 11.1 per cent, as against a percentage of 13.2 eight years earlier. The inheritance tax yielded $3,104,000, or 2.8 per cent of the total, which is an increase of 1.8 per cent over 1907. The taxes assessed upon personal property stood at $22,180,000,[2] which was 19.8 per cent of the total, the proportion of personalty being 3 per cent greater than at the beginning of this period. Finally, real estate taxes contributed $68,776,000, or 61.2 per cent, which was 0.7 per cent less than in 1907.

As was to be expected, the introduction of a tax upon direct inheritances led to renewed efforts to secure a better method of taxing personal property. In response to a petition from leading business interests, and upon the recommendation of the governor, another tax commission was authorized in 1907. In the following year this commission recommended [3] changes in the distribution of the corporate franchise tax, the exemption of future issues of county and municipal bonds, the appointment of supervisors of assessors, and the introduction of a flat tax upon intangible property — the so-called " three-mill tax."

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[1] From this total automobile licenses are excluded.

[2] In this item is included $76,644 of revenue paid into the state treasury under the operation of the bond registration tax.

[3] Report of the Commission on Taxation appointed under the provisions of ch. 129 of the resolves of 1907 (Boston, 1908).

The first proposal was promptly carried into effect by a law which provided that thereafter the taxes paid by manufacturing and mercantile corporations and distributed among the several cities and towns should be divided equally between the localities where the stockholders resided and those in which the business was carried on.[1] Since previously the whole amount not retained by the state had been allocated to the towns where the stockholders were domiciled, this act tended to mitigate somewhat the growing inequality between the wealthy residential towns and the rest of the state. Subsequent acts[2] turned over to the towns where business was carried on the whole of the revenue from ordinary business corporations except that part, representing the proportion paid in respect of stock owned by non-residents, which was retained by the Commonwealth. The result was that between 1905 and 1915 the whole amount of revenue received from corporation taxes by the fourteen favored towns previously referred to, decreased from $10.36 per capita to $6.20, whereas in the rest of the state it increased from $1.62 to $1.93. In 1916, a final act[3] provided that the taxes paid by all remaining classes of corporations, except that part representing non-resident stock, should be allocated to the cities and towns where the business is carried on. This leaves only the revenue from the bank tax subject to the old rule of distribution according to the domicile of the stockholders.

The second recommendation of the commission also was accepted. In 1905, the state treasurer had urged that future issues of bonds of the Commonwealth should be exempt from taxation. He showed that of $84,580,000 of registered bonds then outstanding 70 per cent were held outside the state, 24 per cent were held by corporations and institutions within the state but exempt from taxation thereon, and only 6 per cent were in the hands of individual inhabitants subject to local taxation.[1] The legislature, accordingly, passed an act exempting future issues of state bonds,[2] under which it was estimated that the state gained ¼ of 1 per cent in the interest rate upon the next issue.[3] The cities and towns now came forward with the request that their securities also should be made tax exempt, and the legislature exempted from taxation future issues of county and municipal bonds.[4]

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[1] Ch. 614 of 1906.

[2] Chs. 456 of 1910 and 196 of 1914.

[3] Ch. 299 of 1916.

This step was stoutly opposed by most of the remaining advocates of the general property tax. But the practical situation confronting the cities and towns called loudly for a change. No investor would purchase a bond yielding 4 per cent interest with the expectation of paying a tax amounting to 1½ or 2 per cent, and accordingly city and town treasurers withheld from the assessors information concerning the ownership of municipal bonds. In some cases, indeed, they made it their policy to inform investors that this was their practice. Little or no revenue was actually derived from the tax upon municipal bonds, while the fact that such bonds were legally taxable tended to limit somewhat the demand and so to increase the rate of interest. Neither the state nor the towns could expect a reduction of interest equivalent to the average rate of taxation, since so many of the bonds were held by corporations and exempted institutions and so few of the remainder were ever taxed, but it is probable that the broader market opened to public securities in consequence of exemption resulted in an immediate reduction of about ¼ of 1 per cent in the interest basis.

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[1] Treasurer's Report, 1905, pp. 6–7.

[2] Ch. 493 of 1906.

[3] Treasurer's Report, 1906, pp. 8–9.

[4] Chs. 464 and 594 of 1908.

In time, the exemption of municipal securities opened the door to serious abuse. The city and town officials soon learned that there was a regular demand for tax-exempt securities just before the first day of April in each year, and began to accommodate their offerings to this situation. In January, February, and March, increasing quantities of short term notes maturing after April 1st began to come into the market, which commanded very low rates of interest. In 1911, the total amount of short term notes issued by the towns was $9,700,000, while by 1915 it had risen to $15,363,000, an increase of approximately 60 per cent. But the striking fact was that the notes issued in January, February, and March, which were those utilized over the first day of April, increased from $2,580,000 to $5,180,000, or more than 100 per cent; while the amount of notes issued in April, May, and June, which could not be so utilized, remained practically stationary, the increase being less than 10 per cent. Complete data for the cities are not available, but the issues of notes recorded in the leading financial papers show the same conditions that developed in the towns. In 1911, these papers reported the issue of $4,667,000 of city notes during the months of January, February, and March, while in 1916, they reported a total of $9,870,000, an increase of over 110 per cent. The March issues, which were especially sought around tax day, rose from $1,460,000 in 1911 to $5,590,000 in 1916, an increase of nearly 300 per cent. Interest rates upon these issues were very low, sometimes falling below 2 per cent, and in some cases reaching such figures as 1.3 per cent, or even ¼ of 1 per cent; while one city actually received a small premium for accommodating an investor with $100,000 of notes maturing just around tax day. Thus an exemption intended to apply to permanent investments in municipal securities came to be a means of facilitating temporary changes in investments with a view to evading taxation.

The third recommendation of the commission resulted in the enactment of the law, already discussed, by which three supervisors of assessors were appointed and provision was made for distributing among the local boards information about property uncovered in the probate courts. This proposal originated in connection with the plan for a flat tax on intangible property, but was presented separately by the commission with the suggestion that the establishment of a three-mill tax upon intangible property " will remove all reasonable ground of objection to the proposal for state supervision of the assessment of property." Since it has been supposed by not a few people that the supervisor law was proposed with the deliberate intention of forcing a crisis in taxation affairs, it is important to recall the fact that it originated in connection with a plan for establishing a fair and practicable method of taxing intangible property.

The fourth recommendation was that intangible property should be exempted from other taxation, and should then be taxed at the uniform rate of three mills upon each dollar of the fair cash value, or $3 per $1000. Since such a tax would be levied at the same rate in every city and town, taxpayers would have no inducement to change their domicile; and since it would substitute a reasonable for a confiscatory exaction, it could be strictly enforced without driving people out of the state. It was based upon a plan which had been tried in Pennsylvania and Maryland with no little success, and was subsequently adopted by Minnesota, Iowa, Rhode Island, and North Dakota. The commission realized, however, that it was open to objection upon constitutional grounds, and therefore recommended that the legislature secure the opinion of the Supreme Court concerning its constitutionalty. In case the opinion of the court should be adverse, the commission pointed out that the constitution of the Commonwealth ought to be amended.

In due course the legislature submitted the question to the Supreme Court, which pronounced the three-mill tax unconstitutional.[1] Thereupon, an amendment was proposed striking out of the constitution the requirement that taxes must be proportional, but this failed to secure the two-thirds vote required in the House of Representatives. The following year a similar amendment passed the legislature, but with a provision that it should be referred to a special commission for further investigation. This commission submitted to the next legislature an adverse report,[2] which in 1910 resulted in the defeat of the proposed amendment, so that the project of a three-mill tax had to be abandoned.

Opposition to the proposed constitutional amendment was based upon a number of grounds. In the first place, Mr. Hills, Mr. Henry Winn, and most of the local assessors opposed it because they still desired to have all property taxed at the same rate. Many of them would have favored the taxation of personal property at the average rate prevailing throughout the Commonwealth, but they were unwilling to make any further concessions. A second group of remonstrants would have favored the establishment of a uniform tax upon intangible property at some such rate as $10 or $12 per $1000, but contended that a rate of $3 was altogether too low and would tend to increase the burden upon other classes of property. A third ground for objection was the belief that a reduction of the tax upon bonds and upon stocks of foreign corporations would affect adversely the value of non-taxable securities. And, finally, a fourth reason for opposition was the fear that the removal of the requirement that taxes must be proportional would open the door to favoritism and to radical legislation.

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[1] 195 Mass. 607.

[2] Report of the Commission Appointed to Investigate the Laws Relating to Taxation (December, 1909).

Taxation conditions in Massachusetts were then so bad that it is probable that the opposition of the first two classes of remonstrants would not have availed to defeat the amendment. But the arguments advanced by the other objectors raised a number of new questions which seemed to many people to require further time for consideration, and divided the forces which otherwise might have favored a better method of taxing intangible property.

VI

In 1911, Governor Foss directed the attention of the legislature to the subject of taxation,[1] and recommended the establishment of a state income tax and the adoption of a better method of taxing wild and forest lands. Prior to 1910 it would probably have been useless to propose in Massachusetts such a measure as a state tax upon incomes, since here, as elsewhere, the people had long been accustomed to the taxation of property and were inclined to regard an income tax as inquisitorial. But the situation suddenly changed when congress submitted to the states the sixteenth amendment to the federal constitution. This brought up for consideration the whole question of income taxation, and required every one in active political life to define his attitude upon it. Those who advocated immediate ratification of the amendment could not urge that a state income tax would be inquisitorial; while those who opposed such ratification usually did so upon the ground that the income tax should be reserved for the states, and were not in a position to argue that Massachusetts ought not to employ it. Governor Foss's proposals, therefore, met with very general support; his amendment authorizing a special forest tax was immediately adopted, and nothing but differences of opinion concerning the proper form of an income tax amendment prevented acceptance of his other recommendation.

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[1] See H. Doc. 1900 of 1911. Also Sen. Docs., 255 of 1912 and 39 of 1913.

These differences, however, proved difficult to harmonize; the more so because they offered a convenient reason for opposition to any change in the method of taxing intangible property. They turned chiefly upon the questions, whether the amendment should authorize a progressive income tax, and whether it should provide that property taxed upon its income should be exempted by constitutional requirement from other taxation. In 1912 and 1913, as in 1911, controversy over these points was chiefly responsible for the defeat of proposed income tax amendments.

But while such controversy continued, conditions were becoming increasingly serious. Orleans had a $3 tax rate, other favored towns were receiving large accessions of taxable personalty every spring, and it was becoming evident to the people of the rest of the state that they could not hope to retain even their existing revenue from intangible property. Moreover, removals of large amounts of personalty to neighboring states were becoming increasingly common, and were causing well-founded alarm. These conditions finally led the mayor and the assessors of Boston to favor the income tax project, and elsewhere tended to disintegrate the opposition of local assessors. Moreover, the tax commissioner had become convinced of the necessity of reform, and the annual reports of his department were dealing vigorously with the subject in a manner which could not fail to impress both the legislature and the public. Finally, Wisconsin in 1912 introduced a state income tax which proved an immediate success and furnished an impressive object lesson to Massachusetts.

In 1911, at the suggestion of Governor Foss, the tax commissioner instituted an investigation of the data furnished by the inheritance tax returns, and found that in estates passing through the probate courts the personal property amounted to between three and four times as much as the realty. From September 1, 1907, to August 31, 1908, the returns of all estates, whether taxable or not, showed that the real property brought under review was valued at $22,462,000 and the personalty at $70,715,000. From September 1, 1908, to December 1, 1911, the returns showed real property amounting to $97,734,000 and personal property valued at $368,741,000. Upon the assumption that the total personalty of the inhabitants of Massachusetts was more than three times the total realty, and that at least one-half of the personalty was taxable under existing law, the tax commissioner estimated that there must be from $4,000,000 to $5,000,000 of taxable personal property within the Commonwealth, whereas the local assessors in that year had assessed but $984,300,000.[1] Up to that time it had been possible to argue that, altho much intangible property evaded taxation, the assessors were able to secure the greater part of it. But thereafter it was usually accepted as a fact that the untaxed personalty, chiefly intangibles, was three and perhaps four times as great as the amount actually taxed. This tended to give a somewhat new turn to discussions of the tax problem.

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[1] See Sen. Doc. 255 of 1912, pp. 2–3.

In 1914, the need for a change in the method of taxing intangible property become so apparent that, without waiting for a constitutional amendment, the legislature established a registration tax upon certain classes of bonds.[1] It provided that holders of bonds secured by mortgage upon tangible property actually taxed in Massachusetts or elsewhere might register such bonds with the tax commissioner and pay a registration tax of three mills on the dollar. Bonds so registered were to become exempt from other taxation. As a property tax, of course, this measure would have been wholly invalid, but the legislature acted upon the theory that it might be upheld as a valid excise. Doubts about the constitutionality of the measure were sufficient to prevent most investors from taking advantage of the act, but substantial amounts of bonds were registered with the tax commissioner up to the repeal of the law by the Income Tax Act of 1916.

Agitation for a better method of taxing intangible property was becoming increasingly active and influential. In 1908, a committee of prominent citizens was organized to advocate the adoption of the three-mill tax, and the following year the Boston Chamber of Commerce took up the subject in vigorous fashion. In 1910, a state-wide organization known as the Merchants' and Manufacturers' Committee on the Tax Laws came into the field, so that the movement was no longer confined to Boston and its immediate vicinity. In 1914, the Massachusetts Tax Association was organized, with Lucius Tuttle as its first president and a board of directors representing many of the important business interests of the Commonwealth as well as organized labor. Upon Mr. Tuttle's death, Ex-Governor Curtis Guild succeeded to the presidency, and an active campaign was instituted under most favorable auspices. With the coöperation of Governor Walsh and the tax commissioner's department, a constitutional amendment permitting the levy of a proportional income tax, but not requiring that property taxed upon its income *must* be exempted from other taxation, was drafted and submitted to the legislature which ratified it by decisive votes in both branches. This amendment passed the legislature of 1915 even more decisively, and in the following November was adopted at the polls by an overwhelming vote. The way was now open for a reform of the tax on personal property

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[1] Ch. 761 of 1914.

VII

The legislature of 1915, anticipating the ratification of the amendment, authorized the appointment of a special commission on taxation which was instructed to investigate the advisability of changes in existing tax laws and to draft an income tax act. In January, 1916, this commission[1] submitted the draft of a well-considered act which, under the impetus of the overwhelming ratification of the income tax amendment at the polls, was enacted after much discussion but with little effective opposition.

The income tax law of 1915 was designed primarily to provide a better method of taxing intangible property. It therefore exempts such property from local taxation, and imposes upon its income a tax of 6 per cent, from which, however, $300 of taxable income is exempt for persons whose total income from all sources does not exceed $600. But for the tax levied since 1646 upon personal, trade, and professional incomes, the law of 1916 might have been confined to the income from intangible property. Since, however, that tax was in existence and was not likely to be repealed, it was necessary for the new act to take cognizance of this fact. It would have been clearly undesirable to have two income taxes: one levied by the state and strictly enforced; the other levied by local assessors and almost a dead letter. The obvious and expedient solution was the transfer of the old local tax to the Commonwealth, and therefore the law of 1916 includes a tax upon income from personal, trade, and professional earnings. Finally, the act imposes a tax of 3 per cent upon profits derived from dealings in intangible personal property.

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[1] Report of the Special Commission on Taxation (1916).

The new law, therefore, is much narrower in scope than the Federal income tax, which applies to income from all sources, and somewhat narrower than the Wisconsin income tax, which reaches practically all incomes except dividends from certain classes of corporations. It follows, however, what was undoubtedly the line of least resistance for Massachusetts. There was no popular demand for a new method of taxing real estate and tangible personal property, and the problem before the legislature was that of finding a better method of taxing intangible personalty. The result is a perfectly logical adjustment by which personal, professional, and trade incomes, and income from intangible property are taxed by the state; while tangible property continues to be subject to local taxation upon its capital value.

Following antecedent practice, the Massachusetts income tax is imposed upon "inhabitants" of the Commonwealth. It is, therefore, a personal tax payable by people who are inhabitants of the Commonwealth at any time between the first day of January and the thirtieth day of June in any year. Persons who are not inhabitants within the meaning of that word as defined by the Supreme Court are not subject to the tax, even tho they may carry on business in Massachusetts; and, upon the other hand, inhabitants of Massachusetts are taxable upon income derived from business carried on outside of the Commonwealth. The working of this feature of the law will be watched with interest.

The tax upon the income from intangible property substitutes a reasonable and uniform tax for one levied at rates that ranged from $3 to $30 per $1000. Under the old system many people evaded taxation, some compounded with the local assessors for a reasonable tax, and still others paid one-fourth or one-third of their incomes. The intention is that the new tax shall be enforced upon every one, and the act accordingly provides adequate methods of administration.

The first thing, of course, is the requirement of sworn returns of income from taxable intangible property, which must be made on or before the first day of March in each year and relate to the income of the preceding calendar year. Failure to file such a return renders a taxable person liable to an additional tax of $5 for every day he is in default. Continued failure after receipt of a notice from the tax commissioner makes a person liable to be assessed by the commissioner for twice the amount of his taxable income, and subjects him to a further penalty of fine, imprisonment, or both. Conviction for refusal to make a return works the forfeiture of a person's right to hold public office within the Commonwealth for such a period, not exceeding five years, as the court may determine. Similar penalties are provided for making fraudulent returns, the law making no distinction between persistent refusal to file a return and the filing of a return found to be fraudulent. Since the enforcement of the act is to be wholly in the hands of the state tax department, these penalties should prove adequate.[1] No careful lawyer or responsible banker will advise a client or customer to trifle with the new law; and there is every indication that the income tax, with its requirement of sworn returns, has been accepted by the business community, and will be strictly complied with. It will not be people of wealth, but those of smaller means and little or no business experience, who will cause most difficulty.

The tax upon the income of intangible personalty applies only to such property as was formerly subject to taxation; thus incomes from mortgages upon taxable Massachusetts real estate, deposits in savings banks, tax-exempt state and municipal bonds, national bank stock, and the stock of Massachusetts corporations, are all exempted. The same is true of income from so-called " stocks " of most of the voluntary associations which are so common in Massachusetts. In general, owners of securities will find that they are taxable only upon income derived from sources that were taxable under the old law. About the only exception is found in the case of trusts or other voluntary associations not owning real estate exclusively, or shares in Massachusetts corporations, and not doing business principally in Massachusetts.

A very important and interesting feature of the tax on the income from intangibles is that it provides for a deduction on account of indebtedness. The property tax had authorized such deduction only against certain credits, that is, it allowed the taxpayer to deduct money he owed from debts due him. The new law does not indeed permit the deduction of interest paid upon any and all debts from the income received by the taxpayer from taxable intangible property. To do so would have been wrong in principle and would have opened the door to wholesale evasion. Deduction of all debts from taxable income is necessary as well as proper under a general income tax applicable to income from all sources, but under a partial income tax it is manifestly impossible. The new law, therefore, follows what may be called the principle of granting the taxpayer a proportional offset or deduction. It provides in effect that, from the income received from taxable intangible property, the taxpayer may deduct such a proportion of the interest paid on his total indebtedness as the income which he derives from taxable intangible property bears to his total income.

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[1] The act, of course, makes suitable provision for preventing disclosure of the details of tax returns. It provides, however, that the names of the persons who have filed returns shall be open to public inspection. It permits taxpayers to file their returns either with the tax commissioner or with the income tax assessor of the district in which they live.

The provisions of the law at this point are necessarily complicated, but their practical operation may be shown by the three following cases: a person receiving $99,000 of income from taxable intangible property and $1000 of income from other sources may deduct from his taxable income derived from intangible property 99 per cent of the interest paid upon his indebtedness; a person receiving $50,000 of income from taxable intangibles, and $50,000 from other sources will be able to deduct one-half of the interest which he pays upon his debts; and, finally, a person receiving $1000 from taxable intangible property and $99,000 from other sources will be permitted to deduct but one per cent of the interest upon his obligations. These cases do not take account of all the provisions of the law and are intended merely to illustrate the principle which is eminently fair and in practice should offer no serious difficulties.

Another departure from former practice is the provision which grants an exemption of $300 of income from intangible property to persons whose total income from all sources does not exceed $600 during the year in respect of which the tax is assessed. Under the old law a person owning taxable securities received no exemption, and in many cases where small estates were uncovered in the probate courts great hardship arose. There was, indeed, a provision that the assessors might exempt the polls and any portion of the estates of persons who by reason of age, infirmity, or poverty were deemed to be unable to contribute toward the public charges. But this did not meet the needs of the case, since a person with a capital of five or ten thousand dollars was not in a position to plead " poverty." Thus it came about that persons deriving small incomes from taxable property were frequently taxed for twenty or twenty-five per cent of such incomes. The new law not only reduces the rate of taxation to 6 per cent of the income from intangibles, but provides an exemption of $300.

The tax imposed upon income derived from annuities and from " professions, employments, trade, or business " will be levied at the uniform rate of 1½ per cent. This is a trifle less than the average of the local tax rates to which such incomes were subject under the old law. It is expected, however, that the assessments made by state authorities will be so much more complete that the revenue will be considerably greater than formerly. The new law continues the exemption of $2000 of professional, personal, or trade incomes, and provides the further exemption of $500 for a married person and $250 for each child under the age of eighteen years, or for a parent dependent upon the taxpayer for support; but provides that the total exemption shall in no case exceed $3000. Income from annuities received no exemptions under the old law, but under the new has an exemption of $300 if the total income of the annuitant from all sources does not exceed $600.

In its provisions concerning professions, employments, trade, or business, the new law is noteworthy because it carefully defines taxable income. The old law merely provided that the "income" from such sources should be taxed, and that income derived from property subject to taxation should not be taxed. The Supreme Court held, however, that this permitted the taxation of the entire income of a merchant even tho his merchandise might be subject to local taxation,[1] so that in fact double taxation of merchandise and the income derived therefrom was possible. The new law imposes the tax upon the net income of a business, determined substantially as any good accountant would compute it; and then provides that a taxpayer may deduct from such net income a sum equal to 5 per cent of the assessed value of the tangible property, real and personal, owned by him and used in the business.

The tax of 3 per cent imposed upon profits derived from dealings in intangible personal property is levied upon all inhabitants of the Commonwealth whether or not they are engaged in the business of dealing in such property. It also applies to dealings in all classes of securities, taxable and non-taxable. The tax is to be levied upon the "excess of the gains over the losses," and is to be assessed annually. But the law provides that trustees or other fiduciaries shall be assessed at the time a trust is terminated unless it continues for more than five years, in which case the assessment shall be made at least in every fifth year.

This provision of the act occasioned considerable discussion. Without it gains from dealings in intangible property would have been taxable at the rate of 1½ per cent if they formed part of the income of any business carried on by inhabitants of the Commonwealth; but they would not have been taxable to individuals who speculated in securities. Now an income tax differs from a property tax in that it exempts from taxation property yielding no income, which, if it has any value, would be taxable under a property tax. It is obviously the intention of the new law that persons who speculate in non-dividend-yielding stocks shall be taxed upon their speculative gains, even tho they may not be engaged in the business of buying or selling intangible property. That the rate was placed at 3 per cent instead of 1½ per cent was perhaps due in part to the desire to tax the " speculator "; but it is also explicable on the ground that intangible property is now exempt from taxation as property, so that persons who deal in it may fairly be required to pay a somewhat heavier rate than persons who deal in merchandise or other taxable tangible property.

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[1] Wilcox v. Middlesex County Commissioners, 103 Mass. 544.

As already stated, the administration of the income tax is placed in the hands of the state tax commissioner. It was not to be expected that the tax would work well if administrated in approximately three hundred and fifty different ways by approximately three hundred and fifty local boards of assessors; and Massachusetts acted wisely in turning the work over to the Commonwealth. During the fifty years of its existence, the tax commissioner's department has been administered in a manner that has commanded general confidence, and all that needed to be done was to add to its equipment a new bureau charged with the assessment and collection of the income tax.

The tax commissioner accordingly is authorized to appoint an income tax deputy who will have general charge of the taxation of incomes. He is also to divide the state into districts, and to appoint an income tax assessor for each district. Thus the administration will be in some measure localized, but the number of districts will probably not exceed ten or twelve, and responsibility will rest with a single ultimate authority, the state tax commissioner. Under this arrangement there will undoubtedly be intelligent and even-handed enforcement of the law in every city and town, so that taxpayers will have the assurance that all citizens are being treated alike. The tax commissioner is authorized to make necessary rules and regulations for the assessment and collection of the income tax, and will undoubtedly be given a generous allowance for necessary expenses. Upon the administrative side, therefore, the law of 1916 seems to make adequate provision for strict enforcement of the tax upon incomes.

Information at the source is also required in certain cases. Every employer of labor must report to the tax commissioner the names and addresses of all regular employees who are inhabitants of Massachusetts, and have received wages, salaries, or other compensation in excess of $1800 during the previous calendar year. Also corporations doing business in the Commonwealth and voluntary associations having transferable shares are, unless their stocks fall within the class of tax-exempt securities, required to report the names of their shareholders. They are further required to report the names of all inhabitants of Massachusetts to whom they have paid annuities or interest upon their bonds, notes, or other evidences of indebtedness, except interest on coupon bonds and incomes exempt from taxation under the act. Neither of these requirements is unduly burdensome, so that no such difficulties will arise as have developed under the federal income tax.

A final provision of interest is that concerning the taxation of personal property in the year 1917 when the new law goes into effect. Since intangible property is hereafter to be exempt from local taxation, many taxpayers will be entitled to reductions of the local assessments upon their personalty; but since tangible personal property today is frequently under-assessed, it is important that such persons should not receive greater reductions than they are entitled to. The law, therefore, provides that in 1917 no local assessment of personal estate shall be reduced below the amount assessed in 1916, unless the taxpayer makes a return of his tangible personal property. This means that, in order to benefit by the exemption of intangible property or income formerly subject to local taxation, taxpayers must file with their local assessors in 1917 a return of their taxable personalty. For the average citizen this will mean household furniture in excess of $1000, automobiles, carriages, horses, and live stock; and for merchants and manufacturers it will mean a return of merchandise and machinery. In this manner there will be secured a much fuller assessment of tangible personalty than ever before; so that the new law, by providing a just and practicable method of taxing intangibles, will remove many of the difficulties that have hitherto attended taxation of tangible personalty. In this respect it is probable that the experience of Massachusetts will be the same as that of the few other states that have adopted fair and efficient methods of taxing intangible property.

The new law is calculated to yield a revenue somewhat greater than is now derived from intangible property and taxable incomes, and there can be little doubt that it will fulfil expectations. It should be remembered, however, that Massachusetts has been taxing some $500,000,000 or $550,000,000 of intangible personalty, so that the results of the new act cannot be as spectacular as those secured in other states where intangible property had formerly contributed little or nothing.

The intangible property taxed in 1914 probably paid somewhat less than the average rate of taxation because of its concentration in wealthy towns. If we estimate that it paid $16 per $1000, it yielded a revenue of $8,000,000 to $8,800,000. The amount of incomes now taxed is not known, but it probably does not exceed $20,000,000, and the taxes collected from this source cannot exceed $350,000 or $400,000. The new income tax, therefore, must yield from eight to nine millions of dollars in order to offset the loss of revenue occasioned by the exemption of intangible property and income from local taxation. It ought to do so, since all the estimates show that there are in the state enough taxable intangibles, and professional, personal or trade incomes, to give the desired result. This calculation assumes that the exemption of intangibles and income from local taxation will decrease local assessments of personal property by some $550,000,000. But this will not be the case, because of the provision that such assessments shall not be less in 1917 than in 1916 unless taxpayers bring in returns of their taxable property. The law, therefore, is certain to produce a larger revenue from tangible personal property, an important factor of safety in calculations of the probable result of the new income tax.

Greatly in favor of the new act is the fact that it was adopted only after some years of serious discussion which familiarized the people of the Commonwealth with the evils of the existing system and the need of having reasonable and enforcible tax laws. It represents a fairly general consensus of opinion reached after thoro consideration, and therefore promises to solve the most vexatious of taxation problems. This has been the experience of other states that have introduced reasonable methods of taxing intangible property, and there is little ground for doubt about the result in Massachusetts.

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WHY ORGANIZED LABOR OPPOSES SCIENTIFIC MANAGEMENT[1]

SUMMARY

Scientific management defined, 62. — Time and motion study its distinctive device, 63. — Opposition of labor leaders, 64. — Causes to which the opposition is ascribed, 65. — Examination of the alleged causes, 66. — The fundamental cause, 70. — Craft unions of the dominant type are essentially business organizations, 72. — Their attitude toward output and efficiency, 73. — Scientific management looks to constant change; unionism to fixity and uniformity, 77. — Consequent difference of attitude toward time and motion study, 81. — Fundamental principles incompatible, 82.

SCIENTIFIC management so-called is one phase of the efficiency philosophy and movement which of late have gripped the imagination of the business world and which may be said to constitute the latest phase of capitalistic industrial development. The term " scientific management " is of quite recent origin. In its genesis it had reference specifically to the " Taylor System," first developed and applied by the late Frederick W. Taylor, the well-known author of " Shop Management," and joint inventor of the Taylor-White process for the manufacture of high-speed tool steel. By custom it has been extended gradually to include several modifications and imitations of the Taylor system, and some systems for which independence of development is claimed. Thus at the present time in common usage it is generally applied indiscriminately to the systems of Mr. Taylor, Mr. H. L. Gantt, and Mr. Harrington Emerson, and frequently to the principles and methods of several other so-called " efficiency experts."

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[1] **The paper here printed was undertaken by the late Professor Hoxie at the request of the editors of this Journal, and had been virtually completed by him; none but slight verbal alterations have been made in his manuscript. The fulness of information which it shows, its insight, large sympathy, and high judicial quality add to the sense of loss which was felt at his untimely death (June 22, 1916) by all economists and especially by students of his chosen field.**

The various systems thus commonly included under the general term differ specifically in many respects, but they all have in common certain purposes and methods which constitute the basis of organized labor's opposition.

Theoretically, scientific management is an attempt through accurate industrial analysis to discover and put into operation the objective facts and laws which underlie true efficiency in production. In its broadest and best application it attempts through this process of analysis to determine the best location and structure of the shop for the particular manufacture designed; the most efficient processes and methods of production in general and in detail; the material, organic and human arrangements and relationships best suited to further the productive process; the most effective character, arrangements and uses of the machinery, tools and materials employed; the methods of selection and training of the workmen and managerial force most conducive to efficiency; the character and amount of work which can and ought to be performed by each member of the labor and managerial force; the payment to be accorded each individual in the interests of efficiency and justice; and in general it aims to discover all the material, organic and human qualities, arrangements and relationships which will result in greatest output and lowest cost.

The principal and distinctive device by which scientific management attempts thus to discover and put into operation the objective facts and laws of industrial efficiency, is time and motion study.

It is the use of time and motion study, not only for task setting but for the improvement and standardization of all the mechanical and organic features and arrangements of the productive concern, that chiefly distinguishes scientific management from all previous systems of production. Through the use of time and motion study and the modes of payment which it has devised, it has been claimed that scientific management not only increases efficiency and lowers costs, but does larger and more difficult things. We are told that it substitutes in the shop the government of fact and law for the rule of force and opinion, *i. e.*, substitutes the democracy of science for the autocratic rule of employers or workmen, and removes the rough, arbitrary and often unjust discipline of foremen and superintendents; assigns to each worker the task for which he is best fitted; trains the workers in the best and easiest methods of work; protects them from over-exertion and exhaustion; safeguards them against arbitrary discharge, and lengthens their term of service; raises wages; eliminates arbitrary rate-cutting, and affords increased opportunities for advancement and promotion; and finally, renders unnecessary trade unionism and collective bargaining as means of protection to the workmen.

Such in briefest outline is the essential character of scientific management and such are the essential claims made for it. Why then does organized labor stand in definite and uncompromising opposition to it?

There are more than a hundred specific reasons alleged by the representatives of organized labor to account for their determined opposition to scientific management, and, doubtless, there are many other points of opposition which are not openly proclaimed. In my study last year,[1] I attempted to gather up these scattered allegations and reduce them to some sort of system. Thus classified and generalized to the *n*th degree, they comprehend the following main points.

Scientific management, say the union representatives, is a device employed for the purpose of increasing production and profits, which concerns itself almost wholly with the problem of production, disregarding in general the vital problem of distribution. As such it is a reversion to industrial autocracy which forces the workers to depend upon the employers' conception of fairness and limits the democratic safeguards of the workers. It is unscientific and unfair in the setting of the task and in the fixing of wage rates; in spirit and essence it is a cunningly devised speeding-up and sweating system; it intensifies the modern tendency toward specialization of the work and the task; it condemns the worker to a monotonous routine and tends to deprive him of thought, initiative and joy in his work and to destroy his individuality and inventive genius; it lessens the continuity and certainty of employment, and leads to over-production and unemployment; it is incompatible with, and destructive of, collective bargaining and trade unionism.

Belief in these charges, in whole or in part, which I found on further investigation was general among organized laborers, is sufficient to account superficially and immediately for the determined opposition of unions and union men to the introduction and operation of scientific management. Yet the statement of these objections does not furnish any very real or significant answer to the question why organized labor opposes scientific management. It gives answer in terms of belief only. It gives no clue to the causes of this belief, and, therefore, none to the real nature of the opposition — to the forces which have created the opposition, and hence its strength and significance. In short, this statement of belief does not go to the root of the matter and enlighten us in regard to the fundamental question. In order to do this, we must dig below the surface and find the basic or ultimate reasons for these expressed beliefs.

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[1] The reference is to the volume on Scientific Management and Labor, published by Professor Hoxie in 1915.

During my work of investigation last year several suggestions were brought forward both by opponents and advocates of scientific management to account in general and causal terms for the attitude and belief of organized labor which I have tried to summarize above. It was suggested that the opposition was ascribable to various causes. (1) To general ignorance on the part of the union workers of the true nature, methods, and results of scientific management. (2) To general and fundamental distrust, which the workers have acquired from bitter experience, of anything new or different in industrial organization and methods. (3) To a propaganda of opposition among the rank and file of union men conducted by the leaders, who fear that if a better understanding is allowed to grow up between the real workers and the employers, their prestige and emoluments will be decreased, and even perhaps their positions abolished and they be reduced again to the ranks. (4) To the crudities of scientific management, still in its beginnings, and to the many abuses of it in practice by charlatans and by ignorant and unscrupulous employers, who trade upon the name without understanding the intricate and delicate nature of the thing, the time and patience necessary for its development, or who deliberately violate its spirit and methods for labor driving purposes. (5) To present dominant ideals of trade unionism which are incompatible with those of scientific management as conceived by Mr. Taylor; a suggestion made by Mr. Taylor himself, who said: "Scientific management rests upon the fundamental assumption that a harmony of interests exists between employers and workmen. It is therefore organized for peace, while trade unionism is organized for war. . . . Scientific management rests upon the assumption that the welfare of all demands ever increased efficiency and output; trade unionism is committed to the limitation of output."

Doubtless each of these suggestions has some validity, but none of them nor all of them together seem sufficient to account for the general and determined opposition of the unions. Moreover, some of them, while perhaps not positive misstatements, are yet misleading in their implications. Let us then consider each of them briefly on its merits and through this try to arrive at the essential meaning of the union attitude toward scientific management.

(1) It is true that there has been and is now a great lack of adequate knowledge of the true nature, methods and results of scientific management as a whole on the part of the great mass of organized workers, both the leaders and the rank and file. But it is equally true that increase of knowledge, which is going forward steadily, does not result in any abatement of union opposition. Here and there, individual members of unions or small groups of union workers who are brought into actual contact with efficiency methods in the shop, do become reconciled to scientific management and are sometimes even enthusiastic advocates of it. But the significant thing to note here is that these same men generally cease to be "good unionists" in spirit, even if they do not drop their union affiliation altogether and become its

opponents. The increased knowledge which leading unionists have recently gained of scientific management, in theory and in practice, has intensified rather than lessened their opposition and that of the union movement in general.

(2) There is no doubt that general and almost instinctive distrust of the new, strange and different has played a part in rousing union opposition and to a certain extent is effective in continuing it. It has been ground into the consciousness of laborers by long and bitter experience that industrial change through invention and the application of new machinery and processes, however beneficial it is to society as a whole and even to labor in the long run, usually results in taking toll immediately from the individual worker or the working group concerned. It leads to displacement or lessened security of employment, often in lower wage rates and long hours, through the increased competition of lower grades of workmen and the lower cost and prices of the products affected. The history of industrial development is full of incidents of this kind, and no better example can be found than the case of the English weavers and spinners which Mr. Taylor was so found of citing. For more than a generation after the application of the great inventions which revolutionized the cotton manufacturing industry in England, the competition of women and children operated to displace the men, to lower wages, and to lengthen hours, to such an extent that this industry as it then existed has become the classical example of modern labor oppression and degradation. The world, and even labor, ultimately gained; but meanwhile the workman concerned, the head of the family, sat at home, swept the house, cooked and darned, while his wife and children, down even to the age of five years, worked in the factory from four and five o'clock in the

morning till seven and eight o'clock at night, under the most unsanitary and unsafe conditions, often treated with unheard of brutality, and for an aggregate wage that scarcely sufficed for the food, clothing and shelter necessary to keep body and soul together. And what was true of the English cotton industry has tended to be true in a lesser degree of industrial changes generally. The workmen immediately concerned have tended to be penalized that society might reap the advantages of industrial progress. What wonder then that they have come instinctively to dread change of any kind that immediately affects their work and to oppose such change unless it is accompanied by positive guarantees that they shall immediately share in the social gains, or, at least, suffer no loss of employment and no derogation of their standards of work and wages as the result of the improvements ? And surely we can hardly expect the workman with a dependent family and no savings ahead to welcome innovations that threaten to render less valuable his acquired skill, to throw him even temporarily out of employment, or to transfer him to employment which commands a lower wage rate, simply because these changes will redound ultimately to the benefit of society, to labor as a whole, or even in the long run to his own advantage, when a month of unemployment, two weeks even, may bring him and his to the verge of want, while a few months or years of employment at a lower wage level may mean the wrecking of all his hopes for a home, for the education of his children, for provision against sickness and old age, or may mean even the break-up and scattering of his family.

(3) That trade union officers and leaders have of late carried on a persistent and ever increasing propaganda against scientific management cannot be gainsaid.

Stray sentences from Mr. Taylor's works which could be interpreted as inimical to the workers and their welfare, and particular instances of abuses and perversions of scientific management, have been dramatically presented to the rank and file of unionism as indicative of the general character and results of the system, much in the same spirit as texts from the Bible were formerly used by the clergy to warn the unconverted of the dangers of hell fire. The motives which underlie this propagandistic work I need not attempt to interpret. Whatever the motive, the effect has undoubtedly been to rouse the latent distrust and quicken the opposition of the rank and file of organized laborers. But here again we find no force potent enough to account for the general opposition of the union laity; for it is a well established fact that the rank and file of unionism are quick to distrust their leaders when these leaders take a position which seems to run counter to their own preconceptions and beliefs drawn from immediate experience or tradition. Let the union leader endeavor to enforce on the rank and file something which is fundamentally opposed to their standards and beliefs, and he soon finds that his leadership is of the quality represented by that of the man at the head of the charging crowd. If he is to lead he must run fast to keep them off his heels, and he must run where the mind of the crowd wills.

(4) The crudities of scientific management in practice, and its many abuses by charlatans or by ignorant and unscrupulous employers — conditions and abuses the prevalence of which the scientific management group would be the last to deny or to attempt to minimize — furnish the union propagandists with an inexhaustible arsenal of facts and inferences with which to illustrate their texts and reinforce the multitude of charges which

they hurl against the new movement. But the very employment of these abuses to create opposition against scientific management *per se*, and the persistent refusal to attempt or even to admit any distinction between scientific management as exemplified in the better class of shops where its ideals and principles are being patiently worked out and its mushroom counterfeits where these ideals and methods are consciously perverted, point to grounds of opposition aside from and beyond its abuses, and grounds which evidently have not yet been disclosed.

(5) Finally, then, we come to Mr. Taylor's own explanation of union opposition in the incompatibility of the ideals of scientific management and unionism, in that the one is organized for peace and harmonious action between employers and workmen, the other for war; that the one demands an ever increased efficiency, while the other is committed to limitation of output.

Do we come here to the real and ultimate answer to the question, why does organized labor oppose scientific management? In a certain sense I believe that we do. I believe that the persistent and growing opposition of unionism to scientific management does rest finally upon a fundamental opposition of the ideals essentially characteristic of the two things. But I cannot subscribe to Mr. Taylor's analysis of this proposition — his explicit statement of the opposed ideals of scientific management and organized labor — because I believe that he has here misinterpreted the really fundamental ideals of trade unionism. He has mistaken action for motive,—the objective facts of union policy imposed by circumstances for the underlying purposes of unionism which have been forced to find expression in facts which belie their real nature. In so doing, I believe that he committed a similar error to that of the unionists in judging the ideals of scientific management by its crudities and abuses.

In this connection it is misleading to speak of unionism as a whole. In fact there is no such thing as unionism in the sense of a consistent organic or functional unity. On the contrary, " there are in the United States today hundreds of union organizations each practically independent or sovereign, and each with its own and often peculiar structural arrangements, aims, policies, demands, methods, attitudes and internal regulations. Nor is there any visible or tangible bond that unites all these organizations into a single whole, however tenuous. Groups there are, indeed, with overstructures and declared common aims and methods. But group combats group with the bitterness that can arise only out of the widest diversity of ideals and methods." In short, trade unionism is everywhere very much of an opportunistic phenomenon. Unionists have been prone to act first and to formulate theories afterward; and they have habitually acted to meet the problems thrust upon them by immediate circumstances. Modes of action which have failed when measured by this standard have been rejected and other means sought. Methods that have worked have been preserved and extended, but always the standards of judgment have been most largely determined by the needs and experiences of the particular group concerned.

Under these circumstances, the generalization that we can most legitimately use is to speak of a dominant type of unionism, and we may perhaps say that this dominant type is represented functionally by the ideals and methods advocated by the leaders of the American Federation of Labor.

It is with respect to this dominant type of unionism that I believe Mr. Taylor has mistaken the objective facts of policy imposed by circumstances for underlying purposes. In the case of this dominant union type the reality seems to be this: it is not organized for war, tho it *does* engage in warfare; it recognizes the crying need for increased efficiency and productiveness, tho it *does*, as a matter of fact, under certain circumstances and for reasons which we shall see later, limit the output. In both cases it has been forced to modify its general ideals in practice by the conditions and circumstances which it has found itself obliged to face.

The truth is that the outlook and ideals of this dominant type of unionism are those very largely of a business organization. Its successful leaders are essentially business men and its unions are organized primarily to do business with employers — to bargain for the sale of the product which it controls. It has found, however, by long and general experience that if it is to do business with the average employer or with associations of employers it must be prepared to fight. But throughout its history this fighting has been predominantly conducted with the purpose of forcing employers to recognize it as a business or bargaining entity. Its position and experience have been very much like that of a new and rising business concern attempting to force its way into a field already occupied by old established organizations in control of the market. Like the new business concern, it has had to fight to obtain a foothold. But from this to argue that it is organized for war is a complete *non sequitur*.

A somewhat similar situation has existed in regard to the matter of output. Business unionism has recognized, in general, the evils of restriction and has been willing to allow and even to encourage the introduction of new machinery and improved processes and methods, and to sanction increased effort and productiveness on the part of its members up to reasonable physiological limits, provided it could be guaranteed that the improved methods and the increased exertion and output should not be made the means of lessening the share of the workers in the product or forcing upon them lower wage rates and inferior conditions of employment. But here again it has found the average employer or employers' association standing in the way. It has been taught by long and bitter experience that employers could and would make use of improvements and increased output by the workers not only to seize all of the gains but even to reduce the actual rates and returns to the workers.

The fact is that despite all theorizing to the contrary, the wages of workmen under the unscientific conditions that have prevailed in industry are not determined automatically by specific output or by supply and demand, but immediately by a process of bargaining. The two most important factors in determining the outcome of this bargaining process have been the customary normal or standard day's work and the customary standard of living of the workers concerned. These have been the practical standards of right, justice and expediency most generally considered. In bargaining between employer and workmen, as it has generally taken place in the past, if the employer could make it appear that, under the existing conditions, the workers were not producing up to the standard day's work, he had a strong case to show that wages ought to be lowered or that more work ought to be done for the same pay, which amounts virtually to lowering the wage. If, further, the employer could make it appear that, at the given wage rate, or on the basis of the standard day's work, the workers could secure a standard of living higher than that customary with them, he had a strong case to show that the wage rate ought to be lowered, or, at least, that it should not be increased. In a contest of this kind the employer has been fairly sure of the support of public opinion, arbitrators, the police and the courts.

Now the workers have been taught by long experience that the average employer is constantly seeking to take advantage of these facts to secure an increase of the output *and at the same time to lessen the share and the amount of the product going to the workers.* Thus, when new machinery and methods are introduced, he points to the fact that, at the old wage rates and under the old conditions of work, the laborers are able to secure earnings more than sufficient to maintain their customary standard of living, and makes this a basis for lowering of rates or at least of a refusal to increase wages and improve conditions of work. Where competition is keen, he has usually been able to carry this off by adding to the arguments stated above that profits have not risen or that they have positively declined as the result of the improved methods. Where competition has been absent, *i. e.*, where a combination has controlled the goods market, the employer has usually been strong enough to carry his point regardless of facts and arguments. Thus new machinery and methods have generally not improved the wages and conditions of the workers *immediately concerned* and, as a matter of fact, have not infrequently lowered them, especially where these improvements have created conditions of increased competition among the workers, as they very generally have done.

Turning now to the other aspect of the matter — increased effort and productiveness on the part of workmen where no improvement in methods has taken place — the experience of the workers has been that the old line employer has been constantly endeavoring to speed them up and over-reach them by the creation of " swifts " and " bell-horses," through the introduction of " company men," by threatening and coercing individuals whose native resisting power was weak or whose circumstances were precarious, and by offering secret premiums or bonuses. When through these methods some man or group of men has been induced to speed up, their accomplishment has been taken as the standard for all to attain. Thus, in the case of day work, the accomplishment of the strongest and swiftest was the goal set up for all, if wages were not to be lowered, while in the case of piece work the rate of wages tended to be lowered by these exceptionally rapid workers, because at the given rate it could be shown that they could make more than was necessary to maintain their customary standard of living. Under these circumstances the workers found that increased efficiency and output by members of their immediate group tended to mean not a corresponding increase of pay, but less wages for all, or more work for the same pay; and the only way they could see to prevent overspeeding and the lowering of rates was to set a limit on what any individual was allowed to do, in short to limit individual and group output until the employer could be forced to guarantee increased wages for increased effort and output.

These are facts which, I believe, cannot be controverted. No one recognized this more clearly than Mr. Taylor himself, whose denunciation of the blindness and unfairness of the average employer on account of them has not been exceeded in strength and bitterness by the labor leaders, and who declared publicly that were he a worker up against such conditions he would feel as they have felt and do as they have done in the matter of limitation of output.

In view of the facts of the case, then, as truly stated by Mr. Taylor, the circumstance that they do make war and that they do limit output gives so far no positive grounds for Mr. Taylor's generalization that unionism is organized for war, that unionism is committed to limitation of output, that the present dominant ideals of unionism are incompatible with those of scientific management, and that it is from this source that the opposition of unionism comes.

But if these conclusions hold, why, then, you will at once ask, does not unionism make an exception in the case of scientific management, which is itself supposed to be engaged in a struggle to eliminate those very coercive and oppressive tactics of the old line employers that have forced unionism to limit output and engage in industrial warfare? Why, in the case of scientific management, which is supposed to be committed to the strict maintenance of rates, to the elimination of speeders and to the increase of earnings with improved methods and increased output by the workers, does it not cease its warfare and raise its embargo on increased output? Doubtless the various causes of union opposition which we have discussed are a partial explanation. Ignorance of the true nature, methods and results of scientific management, distrust of the new and the different acquired by bitter experience, the propagandist influence of leaders, the crudities and abuses of scientific management in practice, — all undoubtedly tend to create and maintain union opposition.

But these things are not sufficient to account for it fully. The fact is, I believe, that behind and beneath all this there *is* an essential incompatibility between the basic ideals of scientific management and those of the dominant type of trade unionism. Not an incompatibility of the character Mr. Taylor believed to exist, but one still more fundamental. It is, I believe, this. *Scientific management can function successfully only on the basis of constant and indefinite change of industrial conditions* — the constant adoption of new and better processes and methods of production and the unrestrained ability to adopt the mechanical, organic and human factors at its disposal to meet the demands of these new productive processes and methods. On the other hand, *trade unionism of the dominant type can function successfully only through the maintenance of a fixed industrial situation and conditions*, extending over a definite period of time, or through the definite predetermined regulation and adjustment of industrial change — the establishment of definite rules and restraints governing the adoption of new processes and methods of production and the resulting mechanical, organic and human adaptations which the employer shall be allowed to make. Scientific management is essentially dynamic in its conception and methods. To impose static conditions, or to restrain it from taking full and immediate advantage of dynamic possibilities, robs it at once of its special purpose and effectiveness. Trade unionism of the dominant type is effective only where it can secure the strict maintenance of the industrial *status quo*, or can make its influence count effectively in all matters affecting its membership during the term of a contract. The conditions necessary to the effectiveness of the one are, therefore, incompatible with the effectiveness of the other.

To show the truth of these statements we have only to examine briefly the character and results of the central methods or means through which these contrasted entities, scientific management and the dominant type of unionism, function.

As I have stated previously, the central and essential instrument or method of scientific management, the fundamental means through which it secures knowledge of the industrial situation and which guides it in action toward the attainment of its ends, is time and motion study, applied not alone to the setting of tasks and the making of rates, but to the discovery and inauguration of improvements in the material, organic and human conditions and arrangements of the productive process. Thus used, time and motion study means constant and endless change in the methods of operation. No sooner is a new and better method found and established than an improvement upon it is discovered, involving perhaps new machinery, new tools and materials, and a new way of doing things. Change, change and still more change is the special purpose and mission of this essential instrument and central feature of scientific management. In short, time and motion study in its broader conception appears to be a method of analysis applied to almost every feature of the productive concern and process. And it is something which is not done once and for all, but is applied continuously throughout the life of the establishment. The scientific management based upon it is a perpetual attempt to put into operation the new and constantly developing arrangements continuously revealed by it to be more efficient. Not the least of these are the discovery and adoption of new and more effective operations and tasks, the reclassification of the working force to meet the needs of these new conditions, the shifting of the individual worker from class to class and task to task in order to discover the work for which he is best adapted, the handling of the individual laborer's work and pay with reference to his particular quality and temperament so as to bring into play his best productive possibilities. To deprive scientific management of the immediate use of the results of time and motion study, especially to restrain it from taking advantage of the better classification of workers and the better adaptation of the particular worker to the particular task which time study reveals, would be to deprive it of its chief characteristic — its constant striving toward the end of maximum possible efficiency, the thing that essentially marks it off from ordinary systems of management and gives it productive superiority to them. In short, such deprivation would prevent it from functioning normally.

Turning now to unionism of the dominant type, we find that the great body of its essential policies, demands and methods center about and are in the interest of one great principle — *the principle of uniformity*, as regards all the conditions of work and pay affecting the group of workers which it represents. The principle of uniformity, fully developed and applied, requires that all men doing the same work should be supplied with the same tools and conveniences, work normally the same length of time and at the same maximum speed, turn out the same maximum quantity and quality of goods, and receive the same rate of wages. It is in the interest of this principle of uniformity that the unionists demand the establishment of a standard rate of wages as a fixed minimum, a normal day or week as a maximum, a standard rate of work or a standard day's or week's work, which in connection with a standard rate of wages tends to make this standard rate a practical maximum. It is largely to penalize the violation of these standards, so that there may be no inducement to break down the principle of uniformity, that unions demand pay at an extra rate for overtime and for doing work in irregular ways or under irregular circumstances. It is to prevent the violation of these standards of work and pay, and so to protect the principle of uniformity, that they demand control over the working personnel through the closed shop, control over the output of the individual, the abandonment of bonuses and premium payments, and finally, collective bargaining — a contract made with the whole group of workers, extending over a definite period and covering all the conditions of work and pay for all the men during the contract period.

The reasons for the insistence upon this principle of uniformity have been indicated earlier in this paper. It is not that the unions desire the limitation of output and are definitely committed to it, but that long experience with the average employer has ground into their souls the belief that employers as a class are constantly seeking to lower the wage rate, and at the same time to increase the speed and exertion of the workers of the group through driving or bribing individuals of the group to greater speed and longer hours; and then are setting up the work and pay of these men as evidence to prove that the others are soldiering on the job and must increase their exertions or suffer a reduction of wage rates or a lengthening of hours of work. The only effective way that the unions have found for preventing this underbidding on the part of individual workers and the consequences indicated, is to cut out all working competition between the members of the group, by insisting on the definite establishment of uniform standards to be observed by all and to cover all the conditions of work and pay — *i. e.*, by the establishment and maintenance of the general principle of uniformity, applied to all the members of each particular working group.

And it is evident, say the unionists, that the principle of uniformity thus conceived cannot be established and maintained against the employer who wishes to violate it unless all the conditions and methods of work and pay are *fixed* for the term of a contract — that is, unless all change is either barred, or is predetermined and regulated through the establishment of definite rules and restraints governing the adoption of new processes and methods, and the resulting mechanical, organic and human adaptations and changes in payment which the employer shall be allowed to make during the contract period. Any change in machinery, processes, tools, materials, products, not predetermined or regulated, opens the way for new classifications of work and workers not covered by the contract and thus opens the way by which the employer may seek to overreach the men, to degrade workers, establish new and lower rates of pay and less advantageous conditions of work; in other words to reintroduce competition of workman with workman and consequent underbidding among them, and thus demolish entirely the structure of uniformity which the unions have reared.

Nor is this all. Looking at the matter in the long run and assuming, as the unions habitually do, that the employer is on the outlook to profit at the expense of the workers, not even the predetermination and regulation of changes by means of periodical contracts between the employers and unions can save the principle of uniformity from ultimate destruction where time and motion study is tolerated. For time and motion study means a constant tendency toward the break-up of old established crafts and the substitution of specialist workmen for the all-round craftsmen. Further, through it there is a constant discovery, gathering up and classification by the management of the knowledge of the best ways of performing work, on the basis of which definite instruction cards can be issued. With these and the guidance of functional foremen, relatively unskilled workers can be taught in a short time to do efficiently a very great part of the work which only skilled craftsmen could be trusted with formerly. And still further, the possession of this definite information enables the empoyer to measure more accurately the work and capabilities of each man, and to determine more accurately what wage payments would induce each worker to do his best. Where time and motion study is allowed, then, even under regulation, the employer at the end of each contract period would be less and less dependent on the union and more and more inclined to substitute specialist workmen for craftsmen, and efficiency methods of payment for the uniform day wage. But it is a notorious fact that relatively unskilled specialist workmen do not make good unionists, and that efficiency methods of payment tend to center the attention and interest of each workman on his own affairs and thus to lessen the feeling of mutual interest and common dependence among the workers. Under these circumstances the union could not long maintain the conditions which it considers essential to industrial democracy in the shop and enforce the principle of uniformity against the will of the employer.

There appears to be no getting round the fact, therefore, that constant indefinite change of industrial conditions, such as is essential to the functioning of scientific management, is in clear contradiction to the principle of uniformity which is the central and fundamental principle of trade union policy and is absolutely essential, from the point of view of the dominant type of unionism, to its successful functioning. Instinctively, therefore, the dominant type of unionism fights against change and against time and motion study, the mother of change.

But, you will again say, granting the incompatibility of these fundamental principles, why does not unionism make an exception of scientific management and scientific management employers, who are not trying to overreach the workers but on the contrary are definitely committed to maintenance of rates and to a leveling up of earnings with every increase of efficiency? The answer of the unionists is that these may be the ideals of scientific management but they have not worked out in practice. Scientific management may maintain rates and level up the earnings of the workers at any given task; but what good does that do the skilled craftsmen, the bulk of the old line unionists, when, through the constant and unending change which scientific management is inaugurating, it destroys the very crafts to which the rates for which they stand apply, and forces them to join the crowd of specialized workmen whose earnings may be raised by scientific management but nevertheless will still be lower than the old craftsman's pay? In scientific management at its very best unionism of the dominant type sees its worst enemy, in that scientific management means the abolishment of the very craft conditions and the very psychology of industrial democracy upon which the unions have painfully erected their superstructure of uniformity, and upon whose continuation their identity and continued functioning depend.

Specialize the old line craftsman, destroy his craft, and however high your ideals and kindly your motives, you are destroying the foundations upon which the dominant type of unionism is reared. Every union leader feels this instinctively, every one who has come into contact with scientific management and who has an understanding of unionism knows that this is what it is doing. Here, I believe, we have the final answer to the question: "why organized labor opposes scientific management." Scientific management, properly applied, normally functioning, should it become universal, would spell the doom of effective unionism as it exists today.

R. F. Hoxie.

TEACHING THE INTRODUCTORY COURSE IN ECONOMICS

SUMMARY

The American ideal in education: training for citizenship in a democracy, 88. — Importance of economics to this end, 90. — The borrowed German ideal, leading to research and lectures, has done harm, 91. — The teacher the central figure, 93. — Multitude of recent aids to teaching economics, 96. — Outlines, selections, materials, 97. — Questions and Problems, 100. — The serviceableness of these devices likely to be overestimated, 102. — Effectiveness in teaching, not research, should be the main aim of the college, 105.

THE recent appearance of numerous source books and students' manuals[1] for use in connection with the fundamental course in economics makes a fit occasion for discussing the question of its proper content and direction. It is well that this should be so. Because of the interest and discussion thus aroused significant gain may fairly be expected both in methods of teaching and in the emphasis placed on the teacher's function by university authorities. What follows is concerned solely with undergraduate teaching. It is written from the viewpoint of the college rather than the university; and its underlying philosophy is that of the American ideal in education.

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[1] I have examined the following: Bullock, C. J., Selected Readings in Economics, Boston, 1907; Taylor, F. M., Some Readings in Economics, Ann Arbor, 1907; Fetter, F. A., Source Book in Economics, selected and edited for the use of college classes, New York, 1913; Marshall, L. C., Wright, C. W., and Field, J. A., Materials for the Study of Elementary Economics, Chicago, 1913; Hamilton, W. H., Current Economic Problems, a series of readings in the control of industrial development, Chicago, 1915; Sumner, W. G., Problems in Political Economy, New York, 1884; Davenport, H. J., Exercises in Value Theory based upon "Value and Distribution," Chicago, 1908; Taylor, F. M., Principles of Economics, Ann Arbor, 1913; Papers Presented at the Second Conference on the Teaching of Economics, Chicago, 1911; Marshall, Wright, and Field, Outlines of Economics Developed in a Series of Problems, Chicago, 1910; Fisher, Irving, Suggested Problems for Teachers for use with Elementary Principles of Economics, New York, 1912; Putnam, George E., Practice Problems in Economics for the use of Elementary Students, University of Kansas, 1915; Day, E. E., and Davis, J. S., Questions on the Principles of Economics, New York, 1915; Urdahl, Thomas K., Elementary Economics Manual, consisting of definitions, quiz questions, problems and summaries of economic theories, Madison, 1915; Hayes, H. G., Problems and Exercises in Economics, revised edition, New York, 1916; Wildman, M. S., Syllabus (No title page).

Our early colleges and universities were founded on English models. Around our older universities still lingers something of the English attitude that collegiate training is fit training for the leisured life of the gentleman. It is a liberalizing training acquired without undue stress or strain and unbiased by consideration of its utilitarian bearing. Later we added to our ideals another drawn from German sources. It is based on quite another conception of the function of the university and the proper outcome of its curriculum and training. Not the gentleman, primarily, but the scholar is the product planned for. Not a leisurely life adorned by scholarship pursued for its own sake, but laborious days of scientific research, crowded with the severest mental exertion and resulting in monuments of productive scholarship. American students newly returned[1] from German Universities in the nineteenth century earnestly presented this ideal to their students and colleagues as the true guiding star in education.

Here is no quarrel with either ideal *per se*. Each has served its nation well; and it might be possible that in the future either, or both, would serve us well in American education. But that either is a correct guiding principle by which to plan and judge the training given to American undergraduates today one may fairly disbelieve; that neither is a correct criterion by which to measure the results achieved by any teacher charged with the important duty of introducing American sophomores in the flesh to the subject of economics should be clear after slight reflection.

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[1] Speaking of German university influence, of two hundred and twenty-five American students at German universities between 1815 and 1850, one hundred and thirty-seven went into college teaching. This gave an impetus to the elective system. "Lectures were substituted for recitations. Some of these were dry enough, but, being the German method, were received as the latest thing in education. Research became a word of great significance. There was to be a certain productivity of scholarship, *which more than teaching was the test of fitness to hold a collegiate chair*. Monographs and books were the outward and visible signs of this inward and scholarly accomplishment." Sharpless, The American College, pp. 40–41. The italics are mine.

The American ideal of education found clear expression in our early institutions; it finds freest expression today in our western state universities. One may grant that it needs clear and authoritative statement; that it is followed because American conditions rigidly enforce it perhaps as frequently as because it is clearly apprehended and consciously followed. But it rules, nevertheless. Other and borrowed ideals may disturb the surface but cannot deflect the deep flowing stream of American education. It rules because it is the fit accompaniment of our ideals of democracy; because it has grown with the growth of that democracy; and because it meets the immediate needs and desires of that democracy today. This ruling ideal demands that the American undergraduate be so trained that he is prepared to fulfil all the obligations and duties that fall to his share as a member of a democracy. This means that he is prepared for leadership, in the double sense of capacity to lead and willingness to undertake the responsibilities of that position — citizenship in the largest meaning of the term. A small minority may become scholars by profession, and for them the graduate school may furnish professional training. With the leisured life of the professional gentlemen our youthful democracy has little to do and — the temptation is strong to add — cares less. That ideal befits a mature nation that has conquered its wildernesses, both natural and social; has ordered its institutions; established its philosophy and set metes and bounds to its aspirations.

It does not accord with our lusty youthfulness as a nation. It is not with such aspirations that the youth of America throng our colleges, and for neither the English nor the German ideal of scholarship is support found in the basic conditions existing in American homes and social groups. Quite as surely as the homes and social group from which the English undergraduate is drawn give full support to the English ideal in education do the American home and society generally give support to the American ideal for the college, *i. e.*, training for citizenship in a democracy. Proof of such a spirit is written large in recent American university history. Let any charge of seeming truth be raised that conditions in a given college are subversive of true democracy; that there is undue support of rank and privilege; that there is failure to instill initiative and clear-sighted criticism; or that there is lack of faith in democratic institutions — and the public voice insistently and unerringly declares its disapproval and brooks no excuses or delay in correcting that situation. Other appeals may fall unheeded on the public ear but no one doubts in America that education is the foundation of democracy and that those who are privileged to train democracy's sons and daughters are by that token training first and foremost for citizenship and leadership. Success in this mission brings the American college and professor ready and generous applause; failure or indifference costs both college and professor their positions in public esteem.

Let it be granted, then, at the outset that the college is to be judged by this American ideal and that the teaching of our subject is to be accounted successful in the measure that it contributes to this result; that teachers are worthy and methods are desirable as they meet this test and that the American college graduate is well trained only as and when he is ready to fulfil all his obligations as a citizen of a democracy. What is demanded of him ? And what may the study of economics contribute to the meeting of that demand ?

Now if the fundamental course in economics be part of a system of training for citizenship rather than for scholarship — and in the case of 95 per cent of our boys and girls this will be its actual function — it should be clear that it has a large mission to perform in that training. The citizen needs both to know and to understand the facts and theories with which our science is concerned. He needs, even more perhaps, a mind alert, vigorous, critical, disciplined and practised in handling economic questions. Many, one might almost say most, public questions today have an economic bearing. Many are distinctly economic. Practically all of them demand the same capacity for sustained reasoning and clear analysis as do economic problems. To train effective thinkers is to train effective citizens.[1] And such training, when properly presented, our science is preëminently fitted to give. It has special advantages as a mental discipline. It is effective and thought-provoking beyond most subjects; it takes hold of current problems and discussions and so of the student's interest and it deals with the very stuff with which our students deal later as citizens. Following this American ideal we restrict in a measure our endeavors in dealing with the undergraduate. We aim not at learning for its own sake; the history of our theories is not of essential importance to the future citizen; we do not present a subject; we do not inculcate a set of doctrines; we are not concerned with instilling a mass of facts. These may be worthy ends but they are not the first need of citizens. We would create the disciplined mind, capable of and practised in economic reasoning; we teach students, not a mass of facts; we train minds rather than develop a subject; and we are interested in citizens as a product rather than in scholars.

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[1] " At least twelve college presidents have said to me in the last year that in their judgment the chief advantage of a college course is learning to think." C. S. Cooper, Why Go to College?, p. 152.

In the college thus devoted to the training of the citizens and in the presentation of our subject as a first course, the central factor is the teacher. Texts, manuals and collections of materials may aid his work; they are in no sense or degree a substitute for him. They do not lessen the need for teachers of superior merit; instead they intensify that need. None but the well-poised, broad-minded man, gifted with the true teacher's insight, and knowing the American student with the same precision of knowledge and intimacy of everyday acquaintance that the student of inheritance expends on his guinea pigs, will be able to relegate the machinery to its proper place of subordination to the result. Teachers and paraphernalia exist only as aids to the student. Both are useful only as they stir him to self-activity. Each may be anathema if they interfere with, discourage, or deaden his mental activity.

It is here that the damaging effect of the borrowed German ideal of education becomes potently manifest in our American colleges. The teacher has been subordinated to the scholar;[1] the needs of the students to the

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[1] Compare the positive statements of a well-informed and friendly English critic — speaking of Harvard generally: " Most of the professors care first of all for the advancement of science and scholarship; they prefer lectures to large audiences to the catechetical instruction of multiplied, ' sections ' . . . and, to be perfectly frank, they are not much interested in the ordinary undergraduate." Referring to the young instructor: " Let him remember that his promotion will depend largely upon his showing the ability to do independent work; let him take care not to be so absorbed in the duties of his temporary position as to fail to produce some little bit of scholarly or scientific achievement for himself." W. J. Ashley, Surveys, pp. 458–460.

And an English critic of another school: " The Professor is too often over-specialised and incapable of forming an intelligent, modest idea of his place in education. . . . He stands between his students and books, he says in lectures in his own way what had far better be left for other men's books to tell, he teaches his beliefs without a court of demands of productive scholarship; and the true test of the teacher's success, his ability to stir students to effective thinking, has been lost sight of in the earnest search of the universities for the capable scholar. Here is no quarrel with the professional scholar, no failure to understand the function of the university as a place of research, no belittling of the output of American scholarship. Here is only an attempt to differentiate between the graduate school as a professional school, training scholars, and the college as an American institution, training citizens; between the scholar's function of research and authorship and the teacher's work of developing student minds. One spends his best energies and abilities in the search for truth; the other in the education of ingenuous youth. And it is submitted that the time has come for a clear division of labor between these two groups. It is believed that nowhere in society will the advantages of this principle be more clearly manifest and largely fruitful. No man can serve these two masters, for either he will neglect his students and spend himself freely on book production or he will give his best efforts to his students and fail of preferment. For the universities bid high for the scholar whose abilities are manifest in his published works, and have scant facilities for learning of the teacher whose merits are known only to his students, and to them ten or twenty years later.

Yet it should be evident that ability to carry through research is no earnest of ability to teach students. The qualities demanded are diverse, almost conflicting. One spends thought on materials in libraries, museums or laboratories; the other exercises his ingenuity and

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appeal." "Our universities and colleges are still but imperfectly aware of the recent invention of the Printed Book and its intelligent use in this stage of education has made little or no headway against their venerable traditions." H. G. Wells, Mankind in the Making, p. 299.

imagination in acquiring full information of the state of mind, toward his subject of some scores of undergraduates. The scholar pursues truth; the teacher aids in the development of immature minds. One deals with natural phenomena; the other with human nature. The scholar may be a helpless scientific manager before this hard fact of undergraduate human nature or he may prove as inept at teaching as an artist at painting if he had full knowledge of the theory and history of art and had not yet put brush to canvas. It may be doubted whether one filled with a great zeal to enlarge the bounds of human knowledge will be equally burning with desire to enlarge the content of the undergraduate mind, or inject structure and discipline into its void.[1] Equally men truly called to teach may feel it a hardship when faced with a demand to justify their calling with substantial scholarly productions while fulfilling also the full demand of an American college for class-room work and in conscience bound to do their full duty by their students. Both time and energy must fail in the face of the double demand.[2]

It cannot be too much and too often insisted that the central figure in the educational structure in America is the college teacher. These men set the requirements which secondary schools meet. They fix standards to which the undergraduates measure up. They determine the caliber of men sent on to professional and graduate schools. The college teacher's methods are reflected in secondary schools, for they train the teachers. And they give final bent and direction to the vast majority of our liberally trained men and women. The spirit instilled by the college instructor and the discipline and ability to think clearly which his efforts produce will be certainly evidenced in public discussion and in secondary instruction. But the teacher's function will not be adequately performed unless its importance is adequately estimated and rewarded by the universities. When the American colleges search out and compete for sheer teaching ability; when the test of a college teacher's fitness and preferment rests on no other basis than his ability to teach students; when the teacher is freed from other demands than such as pertain to his better preparation for teaching, then and then only, naturally, may we expect to get the better results we crave. There is no lack of good ability nor yet of devotion to this splendid service. But the change in emphasis needed cannot be achieved by isolated men, however capable or devoted. Nor yet can it be brought about by the sternest effort of an isolated institution. Intercollegiate competition sets standards near those of the least admirable in education as surely as similar business competition holds down standards in the industrial realms. We look to the great universities of America for leadership in this change of emphasis from the German to the American ideal; from the demand for the scholar to search for the teacher; from subordination of the teacher's functions to the demands of productive scholarship. Theirs is the proud position of leadership, and to them fall the duties involved in that position. They can give us this new division of labor. If they dignify and enlarge the work of the teacher, *as a teacher*, others will follow. If these undergraduate teachers are called on to conduct courses of instruction framed after careful consideration of the needs of students fitting for life as citizens of our democracy, that model will rule in American education.

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[1] "The American college teacher has too often been chosen simply because of his scholarship."

"The young professor is scholarly and expert in his knowledge of his subject but utterly without ability to impart it with interest. He lacks driving force as well as guiding and regulating force. He seems at times without the capacity for real feeling." C. S. Cooper, Why Go to College?, pp. 74–75.

[2] "More often the thinker has lived by teaching, and modern University organisation is deliberately aimed at creating such a relation between teacher and student as shall both stimulate the teacher and train the student. In the moral sciences this arrangement is the main source of modern Thought. But it is not wholly successful. There are hundreds of cases in which a professor's teaching spoils his thinking, and these are balanced by hundreds of others in which his thinking spoils his teaching." Wallas, The Great Society, pp. 186–187.

Granting that this change in emphasis may be secured; that college teachers will be hired to teach; that they will be retained and advanced with as much regularity and liberality when they fill this demand as are their scholarly associates of the graduate school when they produce a worthy book; that their entire stock of energy and all their ability are to be devoted to the solution of the problems of teaching students; that they realize that the true test of good teaching is found in the degree of advancement achieved by their students — granting all this, we may anticipate momentous gains in the wit and wisdom with which our subject, among others, is presented. It is again a matter of emphasis rather than anything startlingly new. Good models, worthy the closest scrutiny of the teacher of economics, are found in the laboratory methods of the scientists, and in the case system of the law schools. In these diverse subjects, different methods and appliances are used but all agree in the essential idea that the best teaching, and the only good teaching, is that which stirs the student mind to activity, which induces thought and demands as its test of success proof of capacity for independent judgment, self-directed initiative, and critical analysis. We learn to think only by thinking.[1] The student cannot benefit by the vicarious study and thought of his scholarly instructor. He may gain largely if the same volume of thought is expended in study of the class of which he makes one. This is the teacher's field of investigation renewed with each new class. There is no substitute for the mind to mind work of the teacher. If he does not find the undergraduate mind as fascinating as the evolution of the nervous system he is probably better material for a scholar than for a teacher. If he cannot arouse the same enthusiasm over methods of awakening that mind that he feels over newly invented methods of investigation he should shun collegiate teaching; and if the evidence of solid advance in thought ability manifest in the examination books of his class does not bring the same glow and warmth as the sight of his own latest book he should seek his rightful place in graduate school research.

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[1] "Unless the students are actively engaged not simply in taking in what they are told, but in rearranging it, turning it over, trying and testing it, they are doing little good. We recognise this quite abundantly in the laboratory nowadays, but we neglect it enormously in the more theoretical study of a subject. . . . Ideas of a subject must be handled in discussion, reproduction and dispute." Wells, Mankind in the Making, p. 305.

It is in this spirit that we welcome the stream of books proffered as aids to the teaching of elementary economics in American colleges. They represent the spirit of revolt against the present situation. They supplant the lecture with teaching. It should be obvious that the lecture in these days of easy and cheap book printing has no necessary place in the teaching of economics. It consumes valuable class-room time — time when minds should be actively engaged — in the thought-deadening business of receiving and recording another's thoughts,[1] which might better first be read from a printed page and discussed later in the class-room. The supreme business of our course is to get as much effective thinking done in the year as possible. Right economy of time demands the retirement of the lecture. Consideration of its effect on the student's business of thinking actively enforces the demand.[1]

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[1] Cf. a classic description of the lecture method in actual practice. "They do not listen, however attentive and orderly they may be. The bell rings, and a troop of tired-looking boys, followed perhaps by a larger number of meek-eyed girls, file into the class room, sit down, remove the expressions from their faces, open their note-books on the broad chair arms and receive. It is about as inspiring an audience as a room full of phonographs holding up their brass trumpets." E. E. Slosson, Great American Universities, p. 520.

Agreement with this point of view disposes at once of some of the aids which the new books proffer. Mere outlines of lectures — notes made to save the student's ink — are valueless. Of similar sort are the elaborate endeavors to simplify the study of economics through the use of diagrams and illustrations. It is not thus that one thinks effectively of things economic. It is not so denatured that our student is to find economic problems later as a citizen. Our function is not to painlessly and surreptitiously make lodgment of our doctrines in the student mind. It rather behooves us to stir him to high endeavor and give continual exercise to his mental muscle; to send him out finally well exercised in economic thinking and confident of his ability to perform well in that field.

From another angle we reject attempts in various guises to give aid by arousing interest. Selections and questions which have no other basis than this have no claim on the teacher's consideration. They divert attention from the business in hand. Time is wasted when time is precious. The student is not prepared to differentiate the sham from the real. And, beyond all this, the subject needs no such adornment. This is mistaking the entertaining for the interesting. It signifies lack of insight into the basis of interest. Interest grows in any worthy subject through hard work and conscious achievement. It enlarges in direct proportion to the growth of knowledge and knowledge is won through severe study. We should demand and enforce, then, plentiful mental exercise, reject all adventitious aid, relying for interest on the growing understanding of the students. Interest in heredity may induce a student to care painstakingly for a colony of mice, weigh their food, measure and regulate their indulgence in alcohol, count, weigh and observe the development of their progeny. All this he does with meticulous care if he understands his subject, and counts it a fascinating task. Wonderful is the interest in baseball statistics displayed by the capable fan. Will not similar mastery of economics bring like interest without these adventitious aids ?[1]

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[1] One may add the indictment of the lecture method at Oxford in 1878 from Jowett's note-book:

"The present teaching at Oxford is,
1. Utterly bad for the students.
2. Mere reading to the students.
But on the other hand,
1. It is flattering to the teacher.
2. It enables him to pursue his studies."

The opinion of Johnson at a much earlier date: "People have nowadays got strange opinion that everything should be taught by lectures. Now, I cannot see that lectures can do so much good as reading the books from which the lectures are taken. I know nothing that may be taught by lectures except where experiments are shown. . . . Lectures were once useful, but now, when all can read, and books are so numerous, lectures are unnecessary. If your attention fails and you miss a part of the lecture it is lost; you cannot go back as you do upon a book." Globe edition of Boswell's Life, pp. 174, 561.

That of a well-informed critic recently published: "The lecture system has many advantages. But if introduced too early in the course of education it is in peril of substituting general facts and general knowledge for close study, and it is also in danger of training the memory at the expense of the logical faculties. Furthermore, this peril is enhanced when students attend so many lectures that they have little time left for reading, and less time for reflection." Fleming, Universities of the World, p. 268.

Based on a different conception are the various collections of materials and selections. The undergraduate, we are told, lacks a factual basis for economic thinking. The sophomore boy or girl has not sufficient knowledge of industrial conditions to enable him to apprehend the theories propounded. Much of this undoubtedly is true. The teacher may have moments when it is revealed to him that more facts would make his conceptions clearer, his insight surer. Even the scholar may win to wisdom at the end of the road and realize that only infinite knowledge would prove an adequate basis for his ambitious, heaven-aspiring theories. But this is not for the undergraduate. His business is to begin economic thinking, not end it. Our duty is to start him on that road, not admire his triumphant finish. We get a sophomore to teach; a sophomore produced under American conditions, where home and social group must often fail as supports to our teaching. We teach students drawn democratically from the body politic. We cannot expect this group to assimilate readily and classify accurately the valuable selections garnered in our scholarly excursions There are limits to the most capable sophomore's digestive ability. And mental indigestion in the teaching of elementary economics is a serious malady. Given a good text, a willing student and a gifted teacher who understands the individual sophomore, aid can be found in the use of selections assigned because the need is evident and the student has been led to feel it. Reading to satisfy interest and reading to cover assignments are vastly dissimilar in results. A few supplementary references, of clear-cut character and considerable length which fill gaps in information well apprehended by student and teacher, are undoubtedly essential. But only a scholar can appreciate the monumental mass of selections at hand and the elementary course is too burdened with essential tasks to make their large use practical.[1]

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[1] "Of the assertion that it is expedient to arouse an appetite for both the facts and the theory, at least this much may be said by way of discussion: that spectacular teaching, the teaching generously interlarded with thrills and anecdotes and sentiments, is poor teaching; that a sustained interest is best maintained by inducing the student to do plenty of intelligent and hard work and by the daily stimulus which the live teacher knows how to impart; but that despite these truths it is justifiable and expedient to study carefully how the interest of the student may be aroused and maintained." T. S. Adams, at the 1911 Chicago Conference.

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[1] The following statements are from the preface of a recently published collection — Hamilton's Current Economic Problems. "The readings which follow have been selected from the most miscellaneous sources. They represent all the prominent attitudes, from the most conservative to the most radical, which condition the direction of our development. They are written by men possessed of the widest variety of opinion — economic, political and sociological. They represent emotionally as well as intellectu-

Of similar character is the suggestion carried in our aids that the student may be expected in his first approach to the subject to compare various theories and even systems of economics. Six theories of wages in an elementary economics manual may make any teacher pause. Suggested readings including such widely dissimilar theorists as Patten, Fetter, Clark, Taussig, Adams, Smith, Marshall, Hobson, may well arouse wonder. That any sophomore could make intelligent use of them passes belief. That a practical teacher with abundant every-day contact with American sophomores and with wisdom in appraising the results of his teaching would long continue such methods seems incredible. Ours is a more prosaic and simpler task. For critical examinations of theories and texts, old and new, of systems of economics established and proposed, our work may be a preparation; but our students must learn to stand and walk in the economic field before we demand that they avoid pitfalls and dangers that tax the expert abilities of the tried warriors of economic controversy. These suggestions are discouragements rather than aids to both student and teacher. We recognize here a recrudescence of the German ideal of learning — a denial of the American ideal of training for sound citizenship. This overshoots the mark of the undergraduate teacher's task of developing immature economic minds. We do not aim at completeness of knowledge primarily but rather at effective ability to grapple with economic questions. Hence we reject such suggested aids.

The solid achievements of the new literature would seem to be the suggested questions and problems whose

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ually. . . . They contain sound argument, good judgment, truth. They contain, too, much of overstatement, fallacious reasoning and falsehood. . . ."

This collection is designed for use as the "principal pedagogical instrument" in a semester course in current problems or in connection with a text in general theory. In both cases problems and exercises serve "as supplementary material."

purpose is to stimulate and direct the student's thinking. Given an adequate text and teacher, comprehension enough to be content with *one*, nothing can be better than questions which test the student's apprehension of the text; exercises which require his alert application of theories to concrete situations; problems which test his ability to analyze situations and discern the bearing of various social forces and factors. This is closely akin to the demand made on the citizen. It is hence a preliminary exercise fitted to develop ability to meet that demand. The more concrete, practical and up-to-date these exercises can be made, the better. They must be varied and constantly changed. The student must understand that he is not solving problems but apprehending theories; not memorizing answers to questions but testing the caliber of his understanding of economic principles. One hastens to add that the number of such exercises used should be strictly limited and nicely adjusted to the needs of the class in hand; ideally, indeed, adjusted to the individual student. Much of the matter contained in the more extended manuals represents an attempt to put the teacher between covers, an attempt foredoomed to failure. This will be evident to anyone who attempts to use these formulated questions with a class of students. Many are unnecessary and wasteful of precious time, for every class represents diverse capacities and is possessed of vastly different stores of information. Others miss fire altogether, for the class cannot be expected to be armed at all points and universally alert. Still others require a degree of explanation and preparation before they are made effective that makes their use unduly laborious.

For all such machinery the essential substitute is an adequate text and a teacher of insight. He must know his class as he knows his text and subject — accurately, precisely, and at every stage of their advancement. He must be as apt in class-room methods as a scholar in laboratory technic; he must understand the stage of development of each class — if possible each student — as accurately as the investigator does the stage of advancement of his problems. This is his work — a job to tax his wisdom and knowledge. There is none more difficult and fascinating, as there is none more worth while.[1] Such a teacher will not be at a loss for questions and exercises to stimulate student thinking in the unexplored corners of the subject in hand. Such a teacher will speedily relegate extended books of problems and questions to his reference shelves and invent and adapt daily in his mind to mind teaching the most effective exercises. There will be some exercises repeated year after year in every class. But even here the problems set must be varied. Such variation provides an attractive up-to-dateness. But of much more importance is the effect it has in breaking up the notion that the solution of a given problem is the end sought. The instruction must inculcate the notion that principles are being developed and the student's grasp of them tested. How important this may be, practised and earnest teachers of American sophomores will understand.

This discussion, then, leads to the conclusion that the genuine aid derived by the teacher in class-room work from the new helps in teaching elementary economics will be slight. The benefit derived by the American sophomore intent on mastering that subject will not be great. The best feature of the proffered aid is the exercise and problems material. Every progressive teacher will find helpful suggestions here. Yet every such teacher will find that it needs adaptation to the present need of each class that he teaches. It is agreed that the manuals are most useful in the institutions of their origin and in the hands of their authors, and the reason is that *there* they best meet the students' needs. For the student as he stands in economics is the central — one is tempted to say the unknown — factor in the equation. We welcome the manifestations of interest in the teaching problem. We repudiate the suggestion that that problem can be solved by the production of scholarly books. We would exorcise the productive scholarship ideal here and replace it with that of developmental teaching. We want the research instinct applied to the undergraduate mind. We want freedom and appreciation for the teacher in his own person and for the exercise of his own function.

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[1] Compare Jowett's obituary of his friend Luke, a tutor: "He understood perfectly the secret of success as a College Tutor. The secret is chiefly devotion to the work and consideration for the characters of young men. No young man is really hostile to one who is laboring, evening as well as morning, wholly for his good — who troubles him only about weightier matters — who knows how to sympathise with his better mind — who can venture to associate with him without formality or restraint." Life and Letters of Jowett, vol. i, p. 332.

That such change of emphasis will yield great returns there is abundant evidence. Let any capable economist examine his own progress in the subject. It is certain that his ability and grasp grew through his own and not through his instructor's mental activity. It is equally plain that this points the direction of his efforts as a teacher. Economists are familiar with the pertinent example found in J. S. Mill's description of his severe training at the hands of his father. We are inclined to sympathize with the son on remembering the heroic character of the father's demand for effective thinking. But that teacher developed one of the most capable economists in the subject's history.[1] Many of us will have read of the self-directed efforts of Carl Schurz in mastering the language of his adopted country. More will know of his perfect mastery of English. That students respond and results are adequate to compensate the energy expended is proven by association with students in laboratory courses; with men studying law under the case system, or by consideration of the methods and results evidenced in the Wellesley German department.[1] Always the interest is vigorous and active, the result is sure and gratifying, *if* capable teachers adapt teaching methods to the end of stirring the student minds to activity, willingly spending laborious days in apprehending the content and needs of that mind, and holding the student to a standard of real effort and advancement.

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[1] One may fruitfully consider Mill's own judgment in this connection. "It is, no doubt, a very laudable effort, in modern teaching to render as much as possible of what the young are required to learn, easy and interesting to them. But when this principle is pushed to the length of not requiring them to learn anything *but* what has been made easy and interesting, one of the chief objects of education has been sacrificed." Autobiography, p. 52.

For we note that teaching efforts and manuals alike fail if there is no rigid maintenance of a high standard. The elder Mill knew no quality of mercy here. We may not measure up to his severity in dealing with American students. We recognize the facts in our problem. The American college deals with students drawn from American homes and secondary schools. In state universities, in particular, we owe a duty to each student who appears. We may anticipate a ready reaction on secondary school requirements if the universities set the pace. But in America generally we must as American teachers face the American situation. This is to suggest that our students will come to us from various homes and social groups. They will not come in many instances in our new society from cultured homes. Back of them is no history of educational achievement in the family record. Around their youth was thrown no spell of books and quiet thoughtfulness. Sons and daughters of pioneers and immigrants meet the college teachers in America. They are splendid in ambition, capable in intellect, responsive and loyal, not slothful in spirit, and resilient in mind. But the teacher of insight knows that pioneer America cannot expect for many generations to send the colleges men and women of great home-acquired culture. The teacher must measure growth and achievement rather than the absolute result. He must understand his student as he enters his class; appreciate his endeavor and advancement in the subject; and accept the result if a normal amount of real mental growth is shown. Thus the college has fitted for better life as a citizen. Thus the teacher has worthily fulfilled his mission. Thus the student has economically spent the valuable years devoted to his college course. To effectively aid in this mental growth and understandingly measure it is the teacher's function. It suggests again his central position in the American college.

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[1] "The drastic thoroughness with which unpromising students are weeded out of the courses in German enhances rather than defeats their popularity among undergraduates." Florence Converse, Story of Wellesley, p. 142.

Professor Müller: "Now *joy*, genuine joy, in their work, based on good, strong, mental exercise, is what we want and what on the whole we get from our students. It was so in the days of Fräulein Wenckebach and is so now, I am happy to say—and not in the literature courses only, but in our elementary drill work as well." Ibid., p. 141.

If one apprehends the American college student in his peculiar and worthy character, the next question in view is that of the American collegiate situation. Here, as was suggested above, we meet the question of intercollegiate competition. This enforces the conclusion that reforms must originate above. The leaders in education must give us the lead in the new emphasis needed on teaching and teachers. Similar in effect is the interdepartment competition within the college. No department or teacher can in fairness and in practice exact a higher standard of performance or result than the others in the college, or indeed, than the general educational level of that section of the country. This means that the teacher or department cannot be judged harshly if he fails of the high standard of the elder Mill. As he has differently prepared material so he has hampering surrounding conditions. The standards he sets, if they be attainable through hard work, will be met, and cheerfully met. The larger demand brings compensating larger interest based on conscious growth and mastery in the subject. But the practical problem in America today is to get the standard of acceptable performance in our subject of economics materially advanced. And the concluding suggestion of this paper is that we look for light and leading to the great universities. Let them but set the example, demonstrate the result, through right teaching train teachers imbued with the teacher's interest, *i. e.*, interest in training students, and all else will follow in due course. Their established position renders them immune to the handicaps of competition closely besetting the usual American college and the usual economics department. Their recognized position of leadership places the obligation squarely upon them, and only their assumption of the duty promises the beneficial modification of the present situation. The college teacher cannot make a demand for results higher than that established in his college; the college cannot demand severer study than the going rate in the district. But the university in its position of leadership backed by its acquired prestige is not so limited in setting standards and demanding their fulfilment. The democracy needs disciplined minds; the colleges must therefore enforce this discipline. In doing so they will serve the state, benefit the student, lighten the teacher's work and astonish themselves with the gain in class-room interest and in the enjoyment of the subject by the students. Then the teacher will win back his rich domain abdicated for a season through the lure of productive scholarship. He cannot be forced from his kingdom by any assault of student activities or failure of student support. His powers are plenary. Let him but exercise them. Let the universities but hold up his hands.

This then is our argument. The correct American ideal in the undergraduate course in economics is training for citizenship in the largest meaning of that term; in that training the teacher is the fundamental factor; the college must search for, reward, and support the teacher, making a new division of labor between teachers and scholars, and expecting from the undergraduate teacher the expenditure of his abilities freely on the teacher's function. Given such an emphasis on teaching the proffered helps will find their proper subordinate and limited sphere, the lecture will be abandoned, the attempt to over-crowd the course will be given over. We will settle down to the business of training to think in economic realms, to developing such sophomore minds as American conditions send. To do this efficiently we must uphold a higher standard of results and exact a severer discipline. To effect this change in emphasis and secure this elevation of standards we look hopefully to the leading universities. Theirs is the ability, the opportunity, and the duty.

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THE FALL IN GERMAN EXCHANGE

SUMMARY

I. Is there currency inflation in Germany? 109. — Some reasons for doubting it, 111. — II. International payments where the movement of gold is restricted, 112. — Exchange in New York since 1914; sterling exchange in 1915, 114. — III. German exchange and its decline, 115. — German payments to the United States, 116. — American payments to Germany, 117. — The balance favorable to Germany, 119. — IV. Germany's balances unfavorable in other neutral countries, 119. — Settlements made via New York affect mark exchange, 121. — Scandinavian exchange and its adjustment, 123.

The great war has given rise to many economic phenomena the analysis of which will greatly modify some of our theoretic conceptions. There is a tendency to ignore these changes as much as possible, by explaining the complicated new problems by old seasoned formulas, without careful inquiry into the nature of the new facts. There is no better illustration of this fruitless endeavor than the discussion of the German exchange.

The argument in that case is based on the following facts and assumptions of fact. (1) The paper currency of the German Empire has increased considerably. (2) The bank notes which form the bulk of this currency are not any longer convertible in gold, tho they are legal tender. (3) Prices all over Germany have risen considerably. (4) The German mark valued in foreign currency has declined considerably. Surely, it is said, these are the essential signs of currency inflation and currency depreciation.

This explanation of a very complicated problem may be gratifying from a political point of view. But as an effort in theoretical reasoning, it does not lead to any new results and it overlooks many new facts.

I

The question whether the German currency is overabundant or not cannot be answered at present in a scientific way. We know that the paper circulation of Germany — all sorts of paper included — is now about two billion dollars. We know that the circulation of paper in time of peace varied between 400 to 600 million. That seems to prove pretty clearly that there is a redundant currency. There are a few things, however, which we do not know accurately, but which we ought to take into account.

Gold has disappeared from circulation. We do not know the exact amount of it; we can assume that a considerable part of the gold formerly in circulation has been handed over to the Bank. The visible gold fund of the Bank has grown by 250 million dollars, but it is impossible to state accurately the amount of bank notes which have taken the place of gold formerly in circulation. We know that the area served by German bank notes has increased enormously. It has been estimated that the occupied territories in Courland, Belgium, France, etc., which are served by German bank notes have a regular demand for 250 to 500 million dollars in notes. We do not know to what extent cash payments have taken the place of payments by instruments of credit. The mobilization of an army and the maintenance of huge bodies of men revolutionizes a nation's system of payments. New currency spenders arose everywhere; new centers of receiving money were created. We learn from all countries that an increased demand for currency has arisen, not so much on account of the spending governments, as from the people who receive wages and salaries. There was a serious shortage of small cash everywhere. Even now there is a continuous demand for very small notes and for small coins; the German government has been obliged to issue large quantities of small coins. We have no sufficient data about the total amount of new currency needed for purchasing and selling. And we can only guess whether the amount of circulating medium issued is redundant or not. The only fact we know with certainty is that there are complaints of a shortage of currency amongst the public. And the government is trying hard to improve the German system of payments by facilitating the use of checks and by improving the clearing house system.

On the other hand we know that prices have risen considerably; they have not risen uniformly. It is possible of course to term any fairly uniform rise of prices "currency depreciation." In doing so we merely gain a term, not an explanation. In studying a currency problem we are interested to know why this so-called depreciation has come about. Is it due to over-issue of paper or to shortage of commodities? The scientific problem begins only after we have proved the existence of this so-called depreciation. I am inclined to think its explanation is just the reverse of that usually given. Prices have not risen because bank notes have been issued, but notes had to be issued because the enormous new demand for goods and a dislocation of the ordinary credit machinery brought about a rise of prices which could not be dealt with except by additional money issues. The purchasing power of a modern government drives up prices all over the world, if the trade routes are free. In a case like Germany's, whose purchasing area is restricted to central Europe, the effect of such a demand would have been simply overwhelming, if price regulations had not been resorted to. As it is, the existing shortage of goods affects the currency considerably, notwithstanding all government interference. In an ordinary year, fifteen million tons food-stuffs are consumed in Germany; last year there were but ten millions. The total amount of currency needed for the purchase of the smaller crop was probably greater than the amount wanted for the bigger crop.

As long as the war lasts, we scarcely have the necessary data to search out the real nature of the so-called depreciation. But even today there are serious reasons why we should doubt the explanation given in accordance with former experiences.

(1) There is no close connection visible between the amount of bank notes issued and the level of prices. A large share of the bank notes is issued against treasury bills. When a new permanent loan is contracted, treasury bills are not renewed for some time. The number of bank notes in circulation is greatly reduced. As far as I know, no corresponding move in prices has been recorded.

(2) There is no premium on gold and there is no disappearance of gold. Gold disappeared from circulation, but not because it was driven away or because it was hoarded. It was exchanged by the people against bank notes, without a premium. Undoubtedly appeals to patriotism were made in Germany and in France to induce the people to part with their gold. Must we assume that nations have become so patriotic that their citizens do not dare to hide a gold piece and are willing to hand it in for what they consider deteriorated paper? Or is it not easier to assume that they do not believe in the deterioration of their paper in relation to gold?[1]

(3) The foreign exchanges do not show a close correspondence with the amount of circulation issued. When the German bank note issues are contracted, there

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[1] In Russia the Imperial bank pays a bounty of 45 per cent for gold handed in.

is no corresponding rise in exchange. This absence of connection is very clearly visible in the case of England. About a year ago sterling exchange in New York was $4.56; today it is $4.76; England's note circulation (bank notes and currency) was £86.3 millions; today it is £76.6 millions, and the gold reserve has fallen from £97 millions to £85.6 millions.[1] But exchange has risen.

I do not wish to say that there is no currency depreciation in Germany, or that this depreciation — if there is such a thing is not due to an over-issue of bank notes. These questions cannot as yet be answered in a strictly theoretical way. But it can be shown what has brought about the fall of German exchange in different countries.

II

To the practical financier, foreign exchange is the price of a payment in foreign currency expressed in his own currency. If the foreign currency is depreciated, he gets it cheap; if it is appreciated, he has to pay extra for it. If both currencies are gold currencies, depreciation and appreciation (discount and premium) are limited by the cost of transporting gold. If the foreign currency is a silver currency, without fixed relation, or a paper currency, the movements of premium and of discount have no fixed limits. In such a case the rate of exchange at a given date is determined by the ratio of maturing payments due to one country, and those due from this country to other countries. The value of imports and services received from abroad constitutes the liability, the receipts from exports and services rendered to foreign countries constitute the assets. Both sides are really valued in gold. The imports to a country with paper currency are fixed in gold in the exporting country, and the exports are valued in gold at their destination. But for this, the correlation between countries with paper currency and those with a gold currency would be very difficult. The essential distinction between countries with gold currencies and those without them is the method of adjusting the balance of payments. Countries with a real gold currency are comparatively rich countries. They can afford to keep a part of their capital in gold, in the vaults of their banks or in circulation. As soon as their balance of payment is unfavorable, gold flows out automatically. Or if for some reason this is not desirable the country parts with some of her assets. Foreign bills which have accumulated in the banks are sold; or if it is a serious situation which cannot be dealt with in that way, stocks and shares of foreign enterprises are disposed of. An export of capital takes place. This is one way of adjusting the balance. The other way is the flotation of credit in foreign countries. That may be done by the mere prolongation of bills, or by the opening of new bank credits against which drafts may be sold, or by the flotation of a foreign loan. As the countries with an unrestricted gold currency are the rich countries, an unfavorable balance of payments is for them nearly always of temporary character; it can nearly always be adjusted by transitory measures. Countries with a paper currency are poor countries (from a monetary point of view). They have neither gold nor securities to export. This being so, they find it much harder to get credit when in difficulties. In their case an unfavorable balance of payments is adjusted in a different way. Their imports contract, because the cost of getting gold-priced commodities is rising, when paid for in depreciating paper; whilst the proceeds of their exports to gold-paying countries net them more paper at a falling rate.

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[1] September 2, 1915 and August 24, 1916.

As a paper currency has always been the currency of a poor country, which had neither gold nor investments nor cheap credit to adjust an unfavorable balance of payment, a falling exchange easily suggests the idea of bankruptcy.

The war has greatly affected the practical foundations for regulating international payments. Oversea communications are cut, goods can no longer move as they moved before. Even where communications are open the free export of gold does not exist anywhere today, not even in the United States. The only communications which are fairly free are the wireless. As our theoretical assumptions are based on free movements of goods, services, gold and securities, the changed condition of affairs must affect them somehow.

The most interesting illustration of this state of affairs is the movement of the foreign exchange in New York at the beginning of the war. Sterling exchange jumped from about par to $7.00. The reason was simple. American liabilities abroad were heavier at that date than American assets; goods and services to adjust the balance could not be sent abroad. Gold could not be exported, securities could not be forwarded; credits could not be opened. But payments matured and the competition of honest debtors who wanted to fulfil their obligations drove exchange to about fifty per cent above par. Currency questions and inflation had nothing to do with it. A second illustration is the fall of English exchange in the summer of 1915. England's circulation no doubt was somewhat redundant. But her gold reserve was considerable; she exported gold freely, she exported securities also. Yet exchange went on falling until she contracted heavy loans abroad and organized the sale of her securities. Since then her exchange has been fairly steady, tho her currency is expanding regularly. She has to settle a balance of payments getting more unfavorable every day; she has adjusted the rate of exchange by (*a*) exporting gold, (*b*) selling securities, (*c*) contracting loans. These suggestions may make it easier to understand the German situation.

III

Just before the outbreak of the war, the German mark in New York stood nearly at par. It rose immediately to 104 (cable), as large blocks of German-owned securities were sold in New York, and the money from the sales was remitted. After a period of completely interrupted communications, German marks were sold and bought once more. As time went on the mark declined, until the average rate has come to be about 70 cents for four marks. During this period the commercial relations between Germany and the United States became less frequent every month. Since March, 1915, they have nearly come to a standstill.

It is easy to understand the decline in German exchange in New York which took place at the time when the great cotton shipments had to be paid for, and when very few commodities came from Germany. When the cotton movement came to a standstill, mark exchange was quoted at 82⅞. But there has been a further decline. Today (October, 1916) exchange is 70 cents.[1]

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[1] The par in New York is 95.2 cents for four marks. Cables have been quoted as follows:

Week	ending	October 30, 1914	89–88
"	"	February 19, 1915	85⅛–84⅝
"	"	March 19, 1915	84⅛–82⅞
"	"	October 29, 1915	82⅛–81$\frac{9}{16}$
"	"	November 27, 1915	80$\frac{9}{16}$–80⅜
"	"	January 24, 1916	75⅛–73
"	"	March 31, 1916	73⅛–73⅝
"	"	July 22, 1916	73$\frac{9}{16}$–73
"	"	October 3, 1916	69⅞

Until the spring of 1915 indirect imports to Germany from the United States via neutral countries were considerable. Whilst direct imports of cotton to the Central

If German-American relations were considered as an isolated phenomenon, the mark would be at a premium today, as it was in the first days of August. Notwithstanding the so-called depreciation of the German currency, the balance of payments is in favor of Germany. But gold cannot be sent to Germany; the United States do not own German securities they could return; Germany could scarcely give credit to the United States. A more detailed statement will show plainly that this is in reality the situation.

German payments in the United States are as follows. (1) Salaries of German officials. (2) Support of stranded Germans and the like. (3) Interest and dividends on American concerns in Germany (insurance companies, etc.). But the fall in exchange makes a remittance to the United States rather expensive; a remittance of $1000 costs 5470 marks instead of 4197 marks: American capitalists have a strong inducement to keep their balances in Germany. (4) Profits on American bank balances in Germany. These balances are small, the profits are likely to be kept in Germany. (5) Interest on American-owned German securities. There may be a few investments made before the war (City of Frankfurt bonds were at one time issued in New York). Some American insurance companies may hold a few German bonds over the amount required for their business in Germany. German citizens in the United States and American citizens with German connections hold some German shares and bonds. There has been a lively interest taken in this country in German war bonds. The yearly interest due on them may be about 2 million dollars (this varies with the exchange). (6) The cost of maintaining the German ships. This,

Powers for example fell by 2¼ million bales, imports to neutral neighbors rose by 1.67 million bales. Germany imported about 1⅓ million bales. Payments for imported cotton must have been well over one hundred million dollars.

by far the heaviest regular item, is much smaller than commonly assumed.

Notwithstanding the impossibility of shipping goods to Germany, there were heavy purchases of goods some time ago. These goods have been paid for and the payments, when made, have affected the international balance. In the meantime a part of the goods has been sold, at a profit in most cases. What has not been sold constitutes the basis of excellent credits. Not all payments due by Germany to the United States have to be paid when they fall due. By the use of banking credit quite a considerable amount can be deferred.

American payments to Germany include the following items. (1) Interest and dividends on American securities owned in Germany. Tho there has been a good deal of liquidation, many blocks are still held. The total amount cannot be estimated before the census of foreign investments, recently ordered by Germany, has been completed. (2) Remittances to Americans residing in Germany or to Germans interested in American enterprise. (3) Remittances to American officials and commissioners. (4) Dividends and earnings on German-owned enterprises in the United States; for example the wireless stations, profits on bank balances, dividends of insurance companies. — So far as these items go, there is no essential difference between the nature of the assets and that of the liabilities; the favorable balance is established partly by the dividends on German-owned investments, partly by other items.

Other items are somewhat different. (5) There is a decided flow of capital from the United States to Germany. (*a*) Whenever securities are sold, tho dividends of course cease, the capital returns. Owing to the fall in the exchange dollar securities are sold at a large profit. A bond for $1000 which was bought at 90 ten years ago, cost 3744 marks; it would net 4923 marks today. (*b*) American subscriptions for German war bonds have created a considerable demand for marks. True, the paying of interest brings about a corresponding demand for dollars, but the demand for marks on a five per cent basis, is twenty times the demand for dollars.[1] (6) Besides German dividends from concerns in the United States, dividends from South America and from the Far East, are sent to Germany by way of New York. These items are very considerable. Receipts from the Far East alone, since the war began, compare favorably with the subscriptions of German loans in the United States. (7) In addition to the business transactions there are considerable remittances to Germany of a different character. (*a*) German-American charities have sent a good deal of money to Germany. Since the war began, the Red Cross and kindred associations have remitted over seven million dollars (the Jewish charities are not included). This is nearly double the interest due to America on German war bonds. (*b*) Remittances of German immigrants to their relations at home played no part before the war; as Germany was growing rich, they were no longer needed. But the estates of German citizens who died in the United States, had to be sent home; they contribute a large item. Since the war began, many Germans have been thinking anew of their relatives at home and have forwarded money to them. These sums, however, are small in comparison to what is sent home by Germany's allies, the Hungarians especially. Their remittances during the war have been estimated at eighty millions a year. They affect the German situation considerably. The Austrian immigrants buy crowns in New York; a large part of these " crowns " is offered by the German banks, whose clients in Germany were paid in crowns. They have thus a chance of buying dollars. The fall in exchange is a great boon to the Austrian emigrants and their families. At normal rates, their dollar savings are worth 400 million crowns; today their value is 664 million crowns.

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[1] The small German loan of ten million dollars, which was floated in the United States in April, 1915, is not taken into account, inasmuch as it has been repaid.

It is impossible to make up a complete statement of Germany's " balance of payments " with the United States. But the enumeration here made shows clearly that it must be favorable. None the less, quotations of the foreign exchange show a depreciation of the mark the world over. How can this seeming inconsistency be explained ?[1]

IV

Germany has an unfavorable balance of payments as far as her neutral neighbors are concerned — Holland, Denmark, Switzerland, Sweden and Norway. She has a favorable balance with Austria. She imports a great deal from the other countries, she exports also to them; but the value of her imports is greater than that of her exports. The balance is not redressed by services or sales of securities. It is not easy to get statistical information on these points on this side of the water. Neither Germany nor the neutrals are interested in helping the British blockade with accurate information. On the other hand, the British censor is very anxious to maintain in the United States the fiction that Germany's

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[1] Quotations of foreign exchange in Germany have been:

	Par	Summer of 1916
New York	4.19	5.173
Holland	168.	224¾
Scandinavia	112.½	158¾
Switzerland	81	102¼
Roumania	81	86¼
Bulgaria	81	79
Austria	85.06	69.35

foreign trade is cut off. He is not very keen to demonstrate to the American people that his policy discriminates against them. They are not permitted to send goods to Germany, whilst Scandinavia, Holland and Switzerland cannot be prevented from doing so. Whilst detailed information cannot be published before the close of the war, even the daily papers contain sufficient information to show that a large trade is going on. The result of this trade is an unfavorable exchange, and the balance has to be settled by payments. Tho it is impossible to state the balance, it cannot be less than several hundred millions of dollars.

In ordinary times, Germany would pay for imports either by bills on her banks or by remittance in foreign currency. Since mark exchange is subject to fluctuations, it is fair to assume that the foreign sellers try to avoid risks, and prefer payment in their own currency. Germany has to remit guilders, francs, and Scandinavian crowns. She gets them in various ways. (*a*) By selling her own goods; but owing to the state of war, her industries are unable to export on a large enough scale. (*b*) She might render services to her neighbors and draw interest on capital invested in their industries. That has been done in the past. At present her facilities for doing so are restricted. (*c*) She can sell securities; and this has been done in Holland and Switzerland to a considerable degree. But a large part of her securities are sequestered by the Allies for the time being, and others can be sold at a loss only. The Dutch and the Swiss markets cannot take unlimited quantities of foreign securities, and the countries in question were either not indebted to Germany before the war (Holland), or indebted to her in a moderate degree only. (*d*) She might export gold, as has been done in special cases. Since Germany is not a gold producing country and the unfavorable balance will continue as long as the war lasts, this cannot be done on a large scale. The gold reserve in the bank has always been more than one-third of the outstanding notes; if it were reduced below 600 million dollars, a corresponding contraction of the currency would follow, assuming the ratio of the gold reserve to be maintained.[1] And the nation's business life could not stand such a contraction. (*e*) She could contract loans abroad as the Allies have done. This has been done undoubtedly to some extent, as far as banking credits are concerned. But broadly speaking Germany has preferred a falling exchange to the flotation of a big foreign loan. She prefers a loss of income to a loss of capital.

Such being the case, maturing credits belonging to Germany — in Scandinavia for example — are always smaller than Germany's maturing liabilities to Scandinavia. Scandinavian currencies are at premium. German banks buying Scandinavian crowns in Berlin or in Copenhagen are always in an unfavorable position. They try to buy them in all places where they are offered, spreading their demand, so to speak, over a larger area. Instead of selling all their marks in Copenhagen, Amsterdam, etc., where the demand is limited, Germans bankers sell a part of their marks in New York. There is an American demand for marks surpassing the demand for dollars wanted by Germany for American payments. It is further strengthened by the demand from South America and from the Far East. And instead of selling the Austrian crowns they have received from Austria in Vienna or Berlin, and reselling the marks exchanged against foreign currencies, they sell the crowns in New York for the benefit of the

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[1] Germany could of course follow the example of France. A part of the gold reserve of the bank of France is deposited abroad, as security for operations abroad.

Austrian emigrants. They receive dollars from their sales. With these dollars they buy (cables or wireless) Dutch guilders or Scandinavian crowns to settle their balance.[1]

England has tried to prevent this chain of transactions. It is to her interest as a belligerent to make payments hard to Germany. And it is to her interest as a trader to prevent New York from becoming an international market. She has striven hard to prevent the purchase of guilders and Scandinavian crowns for German account. She put pressure on the banks not to sell by wireless. She favors the use of the cable for all remittances. Through her censorship over the cable she is enabled to follow up all transactions, which greatly helps her efforts to get the control of all international payment in London.

If the Scandinavian-American and the Dutch-American relations were considered by themselves, the balance of payments would probably prove to be in favor of America. The balance of trade is very strongly so. In the last half-year before the war, Dutch imports from the United States exceeded Dutch exports to the United States by thirty-seven millions; this excess rose to eighty-four millions in the first six months of 1915; then fell to thirty millions in the first six months of the present year. But Holland is a great shipping country; she has always held a great many American securities; she has bought great blocks of such from Germany. It is quite possible that the Dutch-American balance of payments is favorable to Holland. But it is impossible that the balance of payments of the Scandinavian countries with the United States be favorable to Scandinavia. It is true that they draw a good income from their shipping, whose profits the war has greatly enhanced; their emigrants may send some money home; they may have bought some American securities. The balance of trade, however, is heavily against them.[1] Their exports have remained stationary or have decreased; their imports from the United States have grown by leaps and bounds. The change is partly due to the dislocation of the German trade. They have to get goods directly from the United States which they got formerly from Germany or by way of Germany. In the earlier part of the war much transit business for Germany was done.

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[1] Tho the yearly payments from and to Germany in New York are considerable, the daily demand for marks is small. Any exceptional transaction or even the news of an intended transaction unsettles the market.

Whatever may be the explanation, the main point is this: the monetary obligations of Scandinavia to America are far greater than the American obligations to Scandinavia. The Scandinavian crown ought to be at a discount in New York; but it is quoted at a premium. Here again the explanation is not difficult. The American demand for Scandinavian crowns is increased by the above-mentioned demand on German account. It is probably augmented too by demands on English account, for Scandinavia sends more goods to England then she ever did before; not to speak of the transit trade to Russia, and the services rendered by the Scandinavian shipping lines. Scandinavian exchange transactions in London are often merely nominal; it is possible that London prefers sometimes to settle via New York, and to draw on America's Scandinavian balances.

On the other hand the trade with Germany provides Scandinavia with the means of getting dollars. Some

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[1] Excess of imports over exports for the first half-year (in million dollars):

	1914	1915	1916
Sweden	1.5	49	15
Norway	-.7	23	28
Denmark	5.8	44	25

mark bills are probably drawn by Scandinavian banks on German banks and on German traders. If the proceeds are to be used for settling Scandinavian-American debts, it may be more profitable to sell them in New York. Or the German banks sell their own marks as well as Austrian crowns in New York. Their Scandinavian customers may prefer payments in dollars to payments in Scandinavian crowns. In that case the dollar proceeds of the mark sales are credited to the Scandinavian banks, whose dollar balances they increase. It is very likely that England and Russia may make use of similar facilities, bringing about an increased demand for Scandinavian currency, or an increased supply of dollars for Scandinavia's account.[1] For a long time Scandinavian and Dutch currencies have been above par in New York.[2] Rates in New York are far above the gold point. It is true that the war has shifted gold points considerably. The loss of interest on gold while in transit is greater, for transportation takes longer time; shipping rates and insurance charges are higher. But a rate of 28.25 cents to the Scandinavian crown is high enough to cover all transportation risks and to leave a handsome profit on gold shipments. Why are there no such shipments? The United States are overstocked with gold, the law does not hinder exports.

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[1] There are natural limits to such triangular trade. The payment of 10,000 crowns in Sweden cost Germany 15,900 marks (September 16, 1916). On that day 15,900 marks would have purchased 2,912 dollars. If the price of 10,000 Swedish crowns in New York was below 2,912 dollars (leaving cost, commission, etc., out of account) it would be cheaper to settle via New York. If the demand for dollar bills for such purposes were to increase considerably, dollars would go up. The demand for crowns in Germany would fall correspondingly, and with it the price of crowns. The original advantage would soon disappear.

[2]

Denmark par,	26.8c	the	crown
Rate, October 3, 1916	28.25c	"	"
Highest rate May 3, 1916	30.30	"	"
Holland par,	40.2c	the	florin
Rate, October 3 (cable)	40.⅞	"	"
Highest rate January 8, 1916	46	"	"

Why cannot debtors pay their debts as cheaply as possible?

The answer is simple: England does prevent it. She has intimated to American banks that she does not favor gold shipments to Scandinavia. If the banks were to disobey her, the insurance companies would be made to refuse insurance and the regular shipping lines would refuse transport. Thus the only safe way for gold shipments is closed. It would be too hazardous to send gold owned by a Scandinavian Bank and insured by a Scandinavian insurance company in a tramp steamer across the sea. Gold is contraband and cannot be earmarked so as to retain its identity. It is scarcely likely that it would ever reach its destination; it would be detained as "suspect." Moreover, the Scandinavian banks are not willing to run any risks for getting gold. Scandinavia is overloaded with gold, the Scandinavians themselves do not suffer from the appreciation of their currencies.[1] In fact, the rise in their exchange makes payments abroad easy for them. Their exports, it is true, might be checked by the rise in the value of their currency. But they do get monopoly prices in any case for what they export under present circumstances. The real sufferers are the debtors of Scandinavia, America, Germany and even England to some degree. England has in fact tried to regulate her Scandinavian exchange by contracting a currency loan in Norway, against which her importers can draw.

The impossibility of forwarding gold to a country saturated with gold ought to act as a premium on imports into Scandinavia. Scandinavia is willing to pay

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[1] The specie holdings have been:

Denmark	July 31, 1915	5.95 mill. £ gold;	July 31, 1916	8.97 mill. £ gold
Sweden	August 15, 1915	6.3 mill. £ gold;	August 12, 1916	9.2 mill. £ gold
Norway	August 15, 1915	3.4 mill. £ gold;	August 15, 1916	6.3 mill. £ gold
Netherlands..	August 14, 1915	31.4 mill. £ gold;	August 12, 1916	49 mill. £ gold

for goods; prices are high and dollars are cheap. But here again the Allies interfere. They have restricted the neutrals by the so-called process of "rationing," which limits the quantities of American produce they may import. In this way a very curious situation has arisen. Gold and services rendered by Scandinavia to other countries (Germany included) cannot be paid by those other countries in gold. They cannot be paid freely in services and in goods. They cannot be settled by the sale of Scandinavian securities, because the amount held abroad is not large enough. Scandinavia is not rich enough to grant her customers great permanent loans. The result is that the mark, the pound sterling, and the dollar, are depreciated when measured in Scandinavian currency. The depreciation of the American dollar has been over 14 per cent. And the cause of depreciation is not that there is an excess of paper currency at home. American currency was never before so well secured by gold as it is today. Exchange is dislocated between neutral countries with a gold currency, because the ordinary methods of adjusting exchange are unavailable, and because it is not considered advisable to proceed to extraordinary means, such as the creation of a large credit for the United States in Scandinavia.

The situation of German exchange is of course somewhat different. Its main feature is that the balance of payments of Germany with all countries is unfavorable. An excess of imports over exports has to be settled, which cannot be compensated by services, by gold exports, by exports of securities, or the contraction of foreign loans. As some of the imports wanted in Germany are goods, which have to be imported regardless of cost, whilst the capacity of production for export is limited by the exigencies of the war, the automatic settlement of the unfavorable balance by contraction of imports and expansion of exports is not feasible. A scientific study of the exchange phenomenon would gain a great deal if it started with the assumption that interrupted communications in the widest sense of the word are responsible for what has happened, and not over-issue of bank notes.[1]

M. J. Bonn.

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[1] Half a year ago some stress would have had to be laid on the influence of a "bear" movement on German exchange. If there is a chance of a future fall in exchange, it is profitable to sell marks for future delivery. The seller does not possess the marks in question; he hopes to buy them later on at a cheaper price. He is interested in a fall in the market. This game was freely indulged in by German speculators. In New York a well-organised attempt was made by banking representatives of the Allies to participate in it. Today short sales are risky. The sale of German marks and of Austrian crowns is regulated by a committee of German and Austrian banks controlled by the Imperial Bank. Very little other material can come into the market. Moreover the handling of the foreign currencies in the hands of Germans is done in a similar way. This being the case, short sales of German currency are dangerous; the sellers might be cornered.

COMMERCIAL CONTRACTS OF THE GENOESE IN THE SYRIAN TRADE OF THE TWELFTH CENTURY

SUMMARY

Introductory: importance of Genoese commerce, 129. — Characteristics of trade with Syria, 131. — Annual or semi-annual expeditions to Syria, 132. I. The Societas, 135. — Variations based on method of forming the capital investment, 140. — Other variations, and development in the last quarter of the century, 150. — II. The Accomendatio, 152. — Variations based on division of profits, 161. — Variations based on expenses, 164. — Conditional associations, 165. — Minor variations, 166. — Conclusion, 168.

THE maritime Italian cities of the Middle Ages have played a great part in the development of modern civilization, and their importance in the economic history of Europe has long been recognized. Amalfi, Pisa, Venice and Genoa afford the best opportunities for the study of the primitive economic conditions out of which those of modern Europe have slowly developed. Among these cities, the role of Genoa has never been sufficiently disclosed. Amalfi's work was done before the others became important factors. Genoa, at first ranking below the other two, accomplished the ruin of Pisan trade in the thirteenth century, fought the great Adriatic rival for centuries with varying success, and at last out-distanced her in the search for world trade and colonial power. From the beginning excluded from territorial ambitions by a ring of hills enclosing narrowly a splendid harbor, never endowed with literary or artistic genius, — even when their wealth was proverbial, — the Genoese for eight centuries occupied a position in marine trade of exceptional interest, even if secondary to that of the Venetians during most of the period in which the two peoples disputed the mastery of the Mediterranean. Past ages have recognized this; from the twelfth century to the Napoleonic era Genoa was autonomous, even under a long series of foreign rulers who were obliged to make concessions to her economic importance.

The commercial ambitions of the Venetians and the Genoese were identical: the control of the Mediterranean trade and the erection of colonial power in the Levant. Never were they satisfied to divide that sea between them, altho at times Genoa succeeded in her ambitions to make the northern half of the western Mediterranean a *mare clausum* to all competitors as the Adriatic was closed to her. Their methods were largely the same. The chief difference lies in this. The Venetian merchants, members of a political unit of superior organization, were forced by their political concept to subordinate their individual enterprises to the good of the republic. The Genoese merchants, members of a commune continually torn by factions as was no other Italian city in the Middle Ages, politically inapt, were by this very defect enabled to pursue their individual courses more freely. The result was apparently a higher development not only of individual enterprise, but of a collective superiority in the technique of trade, in the formation of commercial organizations in the twelfth century, in the establishment of shares in the public debt of the thirteenth, in the double entry book-keeping of the fourteenth, in insurance and banking, in the formation of joint-stock-companies.[1]

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[1] Cf. Sieveking, Zur Handelsgeschichte Genuas, in Studium Lipsiense (Berlin, 1909), pp. 135–171, and the introduction to the same author's work, Genueser Finanzwesen, in Volkswirtschaftliche Abhandlungen der Badischen Hochschulen, erster Band, drittes Heft (Freiburg i, B. 1898).

The life of the Genoese people was trade on the sea; the records of the merchants were all-important; the care with which these records were made and preserved, enables us to study most closely among the Genoese those primitive commercial methods, associative perforce in character, which were common to all branches of the Mediterranean trade. Since their first great enterprises were of the twelfth century, and their richest trade was with Syria, it is in that special field that these methods can best be viewed.

The commercial expansion of the Genoese in the Levant was the result of their participation in the Crusades. With the First Crusade, they began a series of commercial and colonial ventures in the Levant, only the main outlines of which are clearly known. The beginnings of this economic expansion are as yet particularly hazy; but with the year 1154, the records of the Genoese notaries disclose the details of Genoese commerce in the Mediterranean, intermittently to be sure, yet regularly enough to enable us to form some idea of the general characteristics of commercial intercourse, especially with Syria, where by the middle of the century the Genoese had established commercial colonies of vital importance in the history of Syria during the Crusading epoch.[1]

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[1] The Genoese notaries were public officials who acted as chancellors to the consuls, podestà and doges in the successive epochs of the commune's history. They had regular posts in the business quarter, where individuals came to them to record business agreements of all sorts, wills and testaments, receipts, loans, even to have letters written by the notaries. The notaries occasionally went to the houses of prominent merchants, who there gathered their clients and associates for the formation and legal entry of a series of agreements. During the centuries of commercial activity of the Genoese in the Levant, notaries were maintained in the centers of Genoese trade and colonization there, most of whose records however have been lost. Cf. Desimoni, Revue de l'Orient Latin, II (1894), 1–34.

Some progress has been made in the editing of portions of the rich records of the notaries of the thirteenth century, which are more nearly continuous than those for the preceding century. See Desimoni's admirable work, Actes Passés en 1271, 1274 et 1279 à l'Aias (Petite Arménie) et à Beyrouth, in Archives de l'Orient Latin, I, 434–534, and Actes Passés à Famagouste de 1299 à 1301, Ibid., II, part II, 1–120; Arturo Ferretto, The trade of the Genoese with Syria in the second half of the twelfth century and in the first few years of the thirteenth, was subject to risks and contingencies which led to the development of commercial customs not necessarily followed in their trade with other regions of the Mediterranean basin. By 1154, Genoese merchants are found trading freely, through most of the year, with Sardinia, Sicily, southern France, Spain, northern Africa; but the trade with the Orient, and especially with Syria, was undertaken only at regular intervals. The length and danger of the voyage, the need of a protracted stay in Syria to secure the best commercial results after so long, so hazardous and so expensive a voyage, necessitated the careful preparation of a ship, or several ships, the assembly of all the merchants engaged in the trade, of all the capital available, before a profitable venture could be assured. In times of warfare in the west, it was occasionally necessary to convoy the ships for a part of the journey, to meet them on the return that the precious cargoes should not be captured by pirates or enemies.[1] Moreover voyages could not be

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Liber Magistri Salmonis, 1222–1226 (Genoa 1906); Ferretto, Documenti Intorno alle Relazioni fra Alba e Genova, 1141–1270, in Biblioteca della Società Storica Subalpina, vol. xxiii (1906) and vol. l., I. (1910); Giacomo Gorrini, Documenti sulle Relazioni fra Voghera e Genova, 960–1325, Ibid., vol. xlviii (1908); Ferretto, Documenti Genovesi di Novi e Valle Scrivia, 946–1260, Ibid., vols. li (1909) and lii (1910). The number of twelfth century documents to be found in these collections is exceedingly small. The acts of the notary Giovanni Scriba, 1154–1164, the earliest which have survived, have been poorly edited in the Historiae Patriae Monumenta, vol. vi, commonly referred to as Chartarum II. Thus the twelfth century, the period in which Genoese commerce and commercial forms were assuming definite shape, has been largely neglected. In this discussion the first six years of the thirteenth century have been included, partly because they logically belong with the first period of Genoese expansion in Syria, which may be said to end with the deflection of Genoese efforts from the Byzantine Empire to Syria after the Fourth Crusade; partly because the work has been interrupted by recent events in Europe.

References to the unpublished records are here made, as is customary, to the name of the notary to whom the volumes are ascribed in the Archivio di Stato di Genova (often erroneous, because of careless binding into volumes of hundreds of folios of various notaries), to the numbered folios, or to the unnumbered reverse, as f. 48 v.

[1] Eight galleys were sent to meet the ships returning from the Levant in 1199. Annali Genovesi (ed. Belgrano, Genoa, 1890, 1901), II, 77.

undertaken every year. Warfare, civic discord, imperial ambitions in Lombardy, economic distress resulting from disastrous fires, pestilence, commercial losses at sea, often prevented the merchants from going to the Levant.[1] Between 1154 and 1164, it can be said with assurance that only five commercial ventures to Syria were made; between 1177 and 1206, only fifteen years can be cited in which voyages were certainly undertaken.

The ships usually departed from Genoa in the fall, near Michaelmas (September 24), only occasionally in October; the aim was to reach Syria for the feast of Christmas.[2] The voyage was usually direct, except for the possibility of a pause in Sardinia or Sicily. The merchants remained in Syria through the winter, probably until after Easter and returned to Genoa in May or June,[1] not always directly; stops at Alexandria, Sicily or Bougia and even at Ceuta were not unknown.[2] Four times, in 1191, 1202, 1205 and 1206, a voyage was made to Syria in the spring, but only in the first of these years were two ventures equipped; the merchants setting forth on their spring voyages were expected to return to Genoa the following autumn.[3]

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[1] Apparently in years of warfare foreign trade was sometimes forbidden: "Si hoc anno (1159) licuerit ianuensibus ire laboratum," Ch. II, 787. Cf. Goldschmidt, Handbuch des Handelrechts (Stuttgart, 1891), p. 266, note 113. In 1154 a disastrous fire occurred in Genoa, and a richly laden ship returning from the Levant was lost at sea (Ann. Gen., I, 39); in the years 1155, 1159, 1162, Barbarossa's activity in Lombardy disturbed the Genoese profoundly (Ibid., I, 38–39, 53–54, 64, ff.); for these four years Scriba's acts show no records of Syrian voyages. The notaries' acts for the years 1165 to 1178 are lost. Genoa was shaken by civil strife in 1180, and in 1181 a severe pestilence raged, followed by a fire which destroyed one entire section of the city (Ibid., II, 15–16), and again no contracts for Syria are found. A civil war in 1183 between the factions of the Venti and the de Castelli (Ibid., p. 19), families long active in the Syrian trade, may explain the failure to send out a venture in that year. It is practically certain that no commercial voyages were made in the years 1187, 1188 and 1189; the Genoese interests in Syria suffered greatly under Saladin's successes (Cf. Heyd, Colonie Commerciali degli Italiani in Oriente (Turin, 1866), I, 196, ff.) while these were also years of serious strife in Genoa (Ann. Gen., II, 24 ff.). Many ships laden with pilgrims and crusaders, including representatives of the leading families of Genoa, left the harbor for Syria in 1189 for the Crusade (Ibid., pp. 30–33), but the notaries' acts disclose no commercial contracts for trade in Syria. The years 1193–1196 were very troubled, and again no contracts are found; the civil strife of 1193 and 1194 culminated in the overthrow of the consulate and the establishment of the first podestà; in 1194 the Emperor Henry VI came to Genoa and in August a great Genoese fleet sailed under his direction for the conquest of Sicily from which the Genoese expected great returns. Ibid., pp. 43 ff. Maritime warfare with Pisa filled the years 1195–1196. Ibid., 54 ff., 60 ff. The summer of 1199 was one of war with Ventimiglia which continued throughout September (Ibid., p. 78), and again no contracts are found. In October, 1204 a violent storm destroyed many ships in the harbor, at least one of which was preparing to go to Syria (Ibid., p. 92), and the notaries' records contain no Syrian contracts.

The fragmentary character of many of the notaries' books may explain why no records exist in these years; further search may disclose contracts for such years; the fact remains that for the decade 1154–1164 voyages can only be said to have taken place in the years 1156, 1157, 1158, 1160, and 1164; for the period 1179–1206, in the years 1179, 1182, 1184, 1186, 1190, 1191, 1192, 1197, 1198, 1200, 1201, 1202, 1203, 1205 and 1206.

[2] The date of departure can be fixed fairly well by the dates of the last contracts made before the notaries for trade in Syria. They are as follows for the years 1154–1164;

1156, September 2, Ch. II, 359; 1157, August 28, Ibid., 487; 1158, August 23, Ibid., 677; 1160, August 27, Ibid., 963; 1161, September 8, Ibid., 1115; 1164, August 19, Ibid., 1504. The dates of the last contracts before the autumn sailings after 1178 are: 1179, September 4, Notari Ignoti f. 21; 1182, September (16 ?), Not. Lanfranco, registro I, f. 1 v; 1184, September 12, Not. Lanfr., reg. I, f. 143 v; 1186, September 24, Not. Lanfr., reg. I, f. 96; 1190, August 19, Ibid., f. 59; 1191, September 26, Not. Guglielmo Cassinense, f. 60; 1192, September 19, Not. Lanfr., reg. II, part II, f. 24; 1197, September 11, Not. Ign., f. 87 v.; 1198, October 30, Not. Gugl. Cass., f. 118 v; 1200, September 24, Not. Ign., f. 164; 1201, October 7, Not. Ign., f. 209; 1203, September 23, Not Gugl. Cass., f. 226. It will be noted that the date of departure in the later period is usually somewhat later than in the decade 1154–1164, due no doubt to improved ships, greater knowledge of the routes, or increased skill in sailing.

[1] Receipts made before the notaries for money or goods brought from Syria, are curiously few and are dated as early as May one year, as late as the second week in July in another. Ch. II, 1062, 1273, 1274, 1406, 1421. Bishop Ralph of Liège, returning from Palestine greatly in debt, with a large suite, contracted a heavy loan in Genoa on June 21, 1191. Not. Gugl. Cass., f. 38. A contract drawn on November 2, 1159, for trade in the west and then in Syria over a period of two and a half years, provided for liquidation two years from the following St. John's day, (June 24). Ch. II, 792. A contract of May 25, 1191, mentions the approaching arrival of the merchants from Syria, of the next arrival about the feast of St. Andrew (November 30); of still another arrival around Pentecost, 1192 (May 18). Not. Gugl. Cass., f. 32.

[2] Ch. II, 352, 358, 1202; Not. Lanfr., reg. I, f. 96; Not. Gugl. Cass., ff. 55 v, 58, 218, 267. On the eastward voyage calls at Sardinia and Sicily were more common, where cargoes were taken on, where Genoese merchants came aboard, having left Genoa in time to transact business in these places before going east. Ch. II, 907; ibid., ff. 23 v., 36, 36 v., 37 v., 60, 242, 252 v., 261.

[3] Ante, note 1. The first spring voyage of which record has been found was that of 1191; it was comparatively light, and may have been the aftermath of the autumn sailing of the year before, which took place earlier than usual with Richard the Lion-Hearted on the Third Crusade. Ante, p. 132, n. 2; Ann, Gen., II, 35–36. 1190–1191 were years of great activity in the Syrian trade following the restoration of the Christian power in Syria; contracts exist for every month in 1191 from January to September. Not. Gugl. Cass., ff. 4–60. The voyage of the spring of 1202 was light. Not. Ign., ff. 232, 233, 237, 238. The great venture of the spring of 1205 followed the destruction of the ships in the storm of the previous autumn and the deflection of Genoese Byzantine trade to Syria. Not. Gugl. Cass., ff. 242–273, 293 v. No records were found for an autumn voyage in 1205; the venture of the next spring follows naturally therefore. Ibid., ff. 292 v., 293, 293 v., 303.

In the five ventures made between 1155 and 1164 one ship probably sufficed to carry the merchants to the east, to carry them and their wares westward to Genoa again.[1] The largest venture of the whole period from 1155 to 1206 was organized in the spring of 1205, after the loss of the Byzantine markets to the Genoese increased their activity in Syria; about one hundred and thirty contracts were found in Genoa for trade in Syria just previous to the departure of the venture; at least three ships were required for the merchants, who numbered nearly a hundred;[2] there may have been more than three, since the next largest expedition, that of the autumn of 1203, which involved only half as many contracts, was composed of four ships, one of which may have gone to Alexandria only.[3] The ships were owned by individual merchants, or by groups of commercial associates; shares in the ownership of vessels were frequently the subject of business transactions; they were bought and sold or pledged as security, like other commercial commodities.[1]

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[1] Heyd, Histoire du Commerce du Levant au Moyen Âge (Leipsig, 1885), I, 180, speaks loosely of caravanae, fleets engaged in the Syrian commerce in this period; followed by Schaube, Handelsgeschichte der Romanischen Völker des Mittelmeergebiets, (Munich, 1906) p. 154. The examples cited by Heyd are of the thirteenth century: the term itself is not used in Genoese records of the twelfth century and it is practically certain that no purely commercial fleets went east from Genoa before 1203. In 1156, we can be certain only that two merchants went directly to Syria, (Ch. II, 354, 359), altho several went to Alexandria (Ibid., 332, 337, 339, 342, 343, 344). Others made arrangements to go to Sicily and then where they pleased, which might have been to Syria (Ibid., 352, 358). In 1157, at least ten merchants set out for Syria (Ibid., 414, 419, 424, 426, 441, 457, 468, 472, 484, 487). In 1158, eight merchants departed (Ibid., 617, 619, 661, 663, 664, 668, 672, 677); document 661, provides for payment " in proxima estate navi Ribaldi Cenolle sana eunte ultra mare et redeunte " or " sana eunte illa navi qua ire cepero et redeunte," or " sana veniente ea (navis) qua venerit maior pars hominum Ianue "; these expressions seem to imply the expectation that only one ship will go and return. In 1160, four merchants undoubtedly went to Syria (Ibid., 907, 955, 957, 963); nine merchants departed in 1161 (Ibid., 1080, 1082, 1102, 1104, 1106, 1107, 1108, 1110, 1113); others made contracts at about the same time for trade " quo velit," " quo mihi melius videbitur," who may have gone to Syria, altho it is doubtful if at this period this would be customary (Ibid., 964, 965, etc.). Only four merchants of whom we can be certain went to Syria in 1164 (Ibid., 1470, 1473, 1499, 1504). That the same boat going first to Syria carried the merchants bound for Alexandria is not at all impossible in this period when the number of merchants going to Syria was so few; the contracts for trade in Alexandria were drawn in the same period each year in which those for Syria were made; in 1161, a merchant was instructed to go to Syria, then as quickly as he could (" et inde quam cito poterit ") to Alexandria; it is possible that the same vessel would carry him there. Ch. II, 1202. In the period after 1178, the trade demanded a fleet only twice: the autumn venture of 1203 included four ships (Not. Gugl. Cass., ff. 208, 218 v., 219 v., 222 v.) and that in the spring of 1205 included at least three (Ibid., ff. 243 v., 261, 273; Ann. Gen., II, 97).

[2] Not. Gugl. Cass., ff. 242–273, 293 v.

[3] Ibid., ff. 208, 218 v., 219 v., 222 v.

In the weeks preceding the departure of the ships to Syria, this trade was the dominant interest in the commercial life of the city; the last days before the sailing were almost entirely given over to the Syrian trade. Before the departure of great ventures, as in 1203 and 1205, certain notaries devoted all or most of their time for a few days to the merchants engaged in this commerce, who thronged before them with creditors, guarantors, business associates, guardians of minors, and witnesses, to register their contracts with one another in due legal form.

I. THE SOCIETAS

The precarious conditions under which maritime commerce was conducted in the twelfth century, the dangers to be encountered through piracy, the losses so constantly incurred by the attacks of commercial rivals in the more or less continuous warfare among the maritime cities of the western Mediterranean, prevented individuals of means from engaging in trade over-seas solely on their own capital and initiative. The result was the development of associations and partnerships of various sorts, which divided the risk and at the same time allowed the use of a greater amount of capital; thereby the opportunities for profits were greatly increased. The association used by the Genoese most generally in foreign trade in the early twelfth century was that known as the *societas* or *societas maris* to distinguish it from the similar association in use within Genoa or between Genoa and inland towns.[1] The societas was the dominant form of association in the Syrian trade from the beginning to the point when the trade was well established, about 1175. The societas in its simplest form was a partnership between two individuals in which one partner, the *socius stans*, furnished two-thirds of the capital and remained in Genoa; the other partner, the *socius tractans*, or *portitor*, supplied one-third of the capital and carried the whole investment to Syria. For the sake of simplicity, altho the terms are not technically exact, we may designate the first associate as the investor, the second as the factor.[2] The factor operating under the terms of his contract, which might or might not limit his activities in the use of the investment, as will be shown later, carried the capital in goods or money, on one of the ships going from Genoa to Syria, paid his expenses out of the sum entrusted to him, turned it over as opportunity offered after his arrival in Syria, or even in Sardinia or in Sicily, if the ship first made port in one of these islands, and if his contract allowed; he brought the proceeds in goods or in money to Genoa after completing his transactions and placed them in the hands of the investor, under whose direction, with the assistance of the factor, the capital and profit remained for disposition. When the goods had been sold in Genoa or sent elsewhere for sale, a clearance was made and the profits equally divided. This, the simplest form of societas, was made for a single voyage to Syria and return. It was undoubtedly the oldest form of association used by the Genoese for foreign commerce in general and especially for the trade with Syria in the first period of their commercial expansion, the first half of the twelfth century. When the records of the notaries disclose the trade to us, in 1154, the societas, as used for the Syrian trade, has undergone considerable development in many directions, so that the primitive form has given way to more complicated contracts based on these same general features; the simple societas as outlined above is found only occasionally.[1] In the decade 1154 to 1164, the first period covered by notarial records, altho the societas is the form of association used to all but complete exclusion of the forms prevalent later, several significant variations in its use have been introduced.

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[1] Ch. II, 661; Not. Gugl. Cass., ff. 9, 35, 36, 48 v., 255, 265, 273; Not. Lanfr., reg. I, ff. 59, 93 v., 142.

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[1] For the literature on the societas in general, see Goldschmidt, op. cit., p. 254, ff., and Schaube, op. cit., p. 110, ff. Goldschmidt's brief treatment of the societas in Genoese trade is based on the acts of the notary Giovanni Scriba solely and is subject to criticism in the light of unpublished material. Lastig, Die Accomendatio; die Grundform der heutigen Kommanditgesellschaften in ihrer Gestaltung vom XIII bis XIX Jahrhundert (Halle, 1907), touches briefly upon the societas in Genoese commerce, p. 90 ff. Goldschmidt fails to distinguish clearly between the societas and the accomendatio, while Lastig, owing likewise to unfamiliarity with the unprinted material, does not appreciate the importance of the societas in the development of the accomendatio; however, his admirable short discussion covers the period to the nineteenth century.

[2] In the Genoese records of the twelfth century, the associates are indifferently spoken of as socii. In one contract the term portitor is applied to the factor. Ch. II, 1480.

By the middle of the century a certain degree of stability in the Syrian trade had been achieved; the principal centers of trade in Syria were in the hands of the Crusaders; the Genoese were established in Syria as colonists; commercial conditions within Syria were fairly well understood by certain Genoese merchants. A few therefore felt so assured of the continued prosperity of their commercial relations with Syria as to form societates, not for a single voyage alone, but for trade over a period of years, or for a succession of voyages. Thus in August 1158, Willielmus Buronus, one of the wealthiest citizens, formerly consul, formed a societas with Rogerius de Justa for trade in Syria over a period of three years.[1] Apparently Rogerius left Genoa with the investment, one-third of which was his own, traded in Syria, and then possibly elsewhere; he did not return to Genoa until near the end of the period for which he had made the contract.[2] Willielmus Filardus, one of the most energetic merchants of the period, heavily interested in the Oriental trade in general, formed a societas with Ugo Mallonus in November 1159,[3] a year in which no ships went to Syria from Genoa as far as we know, for a period of two and one-half years. Ugo contributed one-third of the capital; his son, Rubaldus, was appointed to take the investment to Provence, then to Genoa, Sicily, Alexandria or Syria, on one or several voyages. These are the only contracts we have of societates for Syrian trade specifically drawn for more than one voyage. It is to be noted that in both instances the contracts are made by men of great wealth, with wide experience as investors in the Syrian trade, men to whom the loss of their capital would not be disastrous, who would be able to direct their factors toward favorable opportunities for trade.[4] There are records of other societates which continued in operation for several years; whether they were originally formed with that intention we cannot say. Ingo de Volta and Ingo Nocentius formed a societas sometime previous to September, 1156; a part of the capital was sent to Syria in that year. In June, 1157, the societas was still in operation; the original investment of 300 *l.* had been increased to 810 *l.*; Nocentius went to Syria in the autumn of 1160, apparently under the same societas, when the working capital had been increased to about 1100 *l*. This societas, in operation for nearly six years, was presumably closed on the return of Nocentius sometime late in 1162.[1] At least two trips to Syria had been made and the merchants were in the meantime distributing their wares in the West. It may be supposed that a part of the profits was occasionally withdrawn by mutual consent. No other example of so highly developed a form is found. Obertus de Sauri, in societas with Willielmus de Sauri, went to Syria in 1157 in the interests of their association previously formed.[2] In the year 1158, Willielmus Buronus, mentioned above as familiar with Syrian trade, is found to have a societas with Ido Mallonus; Mallonus had already made a voyage to Constantinople in 1156 as a factor for Buronus, and undertook a journey to Syria in 1158 in the name of their societas; in the interim he may have gone to Bougia. This societas apparently continued in action until 1161, when the two men formed a new one to sell Oriental wares in France.[3] Between 1161 and 1164 Baldezon Ususmaris and Obertus Lucensis were associated for trade in a series of voyages, at least one of which led to Syria.[4] In the years between 1179 and 1206, when the societas had been displaced by another form of association, there are only two examples approaching those cited; both however are rather augmentations of the capital of societates originally formed for trade in the West, deflected to Syria in 1191 by the prosperity of the business between Genoa and Syria in that year and the next.[5] It is clear that during the earlier epoch, 1154 to 1164, this form of societas was not only not uncommon, but profitable and safe among the more experienced merchants. Unfortunately the records do not allow us to trace its development or decline; when we can once more pick up the threads in 1179 this variety of the societas has almost disappeared. It was peculiarly adaptable to the Syrian trade in the decade 1154–1164, when a few families were in control of the larger part of the trade with Syria.[1]

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[1] Ch. II, 468 (1157), 673 (1158), 1107 (1161); Not. Lanfr., reg. I, f. 95 (1186); Ibid., ff. 59, 91 v., (1190); Not. Gugl. Cass., ff. 35, 52, 55 v., (1191); Ibid., ff. 209, 218 (1203); Ibid., f. 263 (1205).

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[1] Ch. II, 668.

[2] His name does not occur as principal or witness in Genoese records between August 22, 1158 and September 17, 1161. Ibid., 668, 1136.

[3] Ibid., 792.

[4] The names of Buronus and Filardus occur more frequently than any others in the documents of 1154–1164. See Ch. II, passim.

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[1] Ch. II, 359, 424, 955. The name of Ingo Nocentius is not found in the records after August 26, 1160 (Ibid., 955) until February 28, 1163 (Ibid., 1240).

[2] Ibid., 487. This societas in August, 1157 possessed a stock of Oriental wares which suggests an earlier voyage to Syria.

[3] Ibid., 619, 1115. For Ido's voyage to Constantinople, see ibid., 329.

[4] Ibid., 957, 1473.

[5] Not. Gugl. Cass., ff. 46, 58.

The most striking variations from the primitive form of societas found in the Syrian commerce, are based upon variations in the methods of forming the capital investment. They fall into four main groups: (1) societates of several partners; (2) societates in which the factor is authorized to carry money or goods of his own, outside of his customary one-third of the capital of the societas proper; (3) societates in which the investor sends an additional sum, outside of the usual two-thirds; (4) societates in which the factor carries capital for persons quite outside the societas, either with or without additional capital placed by his original partner or by the factor himself.

(1) In the societas of several associates, in the decade 1154 to 1164, there are never more than three contracting parties, two investors, or socii stantes, and one factor. Each contributes one-third of the capital; the factor carries the entire investment; returning to Genoa he places capital and profit in the hands of the investors or of one of them; at the division, the profit is divided into two equal parts, of which the factor receives one, each of the investors his share of the balance.[2] Altho only two examples of this societas are found in this

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[1] Five families controlled the large bulk of this trade between 1154–1164, the Venti, delle Volte, Buroni, Filardi and Malloni.

[2] Societates of several partners, 1154–1165: Ch. II, 359, 677, 1082, 1102.

decade in which the three associates appear before the notary to register the agreement, both in 1161,[1] there are two others, in which the identical arrangement is made, except that the investor formally acknowledges that half of his investment belongs to a third party, who does not appear, but with whom the investor has made an agreement. In 1156, Ingo Nocentius formed a societas with one Alvernacius,[2] the owner of a ship about to go to Syria;[3] Nocentius contributed two-thirds of the capital but stated that half of his share belonged to Ingo de Volta with whom we have seen he was associated in trade for several years. The other instance is more interesting. For the voyage in the autumn of 1158, Pascalis Defantis with his father's authority carried to Syria for Willielmus Filardus, 105 lire, 5 soldi in merchandise; of this, Filardus acknowledged that 52 *l.* belonged to his nephew Ansaldinus, a minor no doubt.[4] Pascalis was directed to sell the goods in Syria; then according to what money of his own he could there command, he should take a half or a third of the proceeds of the sale, add thereto of his own property "cum testibus," *i. e.*, before a notary,[5] and trade with the proceeds. On the return, the profits were to be equally divided between the younger Defantis and Filardus, who received his nephew's share. Perhaps Defantis had merchandise to sell, of the result he was doubtful; or he and his father may have utilized the time intervening between the formation of this contract and the departure of the vessel, to raise money in Genoa; of the status of the Defantes we know nothing except that at the moment they were unable to furnish 52 *l.* for their share in the societas, nor did they expect to be able to furnish more than a fraction of this amount in Syria. Indeed it is significant that in each one of these instances, the factor was a man of small means, of little importance in Genoa, or one whose family name is not even given.[1] This suggests unwillingness on the part of the investor to assume more than one-third of the risk, when the factor was not of excellent standing. Alvernacius is the only exception; he owned the vessel on which he was going, while in that instance the associates were Ingo Nocentius and his partner de Volta, men well able to assume any risk, placing their money wherever opportunity offered.

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[1] Ch. II, 1082, 1102.

[2] Ibid., 359.

[3] Ibid., 345.

[4] Ibid., 677.

[5] The Genoese maintained notaries in Syria throughout most of their period of activity there. Desimoni, Revue de l'Orient Latin, II, pp. 4–5.

In the later period under review, it was this societas of several partners which prevailed over all other forms of the societas, but for reasons other than those which seem to explain the use of it between 1154 and 1164.[2] Four were societates in which the major part of the capital was contributed by the same family. In 1203 Lanfrancus Gallus formed a societas to which he contributed 100 *l.*; his widowed sister, Agnesia, gave the same amount out of her patrimony; she and the coguardians of her children's inheritance supplied 100 *l.* of that inheritance. On the return, Lanfrancus was directed to turn all the proceeds over to Agnesia, and at the division, Lanfrancus should receive one-half of the profits, Agnesia, one-fourth, and her children one-fourth.[3] This is a fair example of these four associations. Two other contracts, somewhat different from the above, and exactly alike in every respect, were made in

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[1] "Alvernacius," Ch. II, 359; "Pascalis Defantis," Ibid., 677; "Ansaldus," Ibid., 1082; "Ugo de Papia," Ibid., 1102, only once again encountered, as a witness in 1164, Ibid., 1475.

[2] Societates of several partners: Not. Gugl. Cass., f. 52 v. (1191); ff. 215, 223 (1203); ff. 243 v., 245 v., 267, 270 (1205).

[3] Ibid., f. 223.

1203 and 1205; the four partners are the same, their respective investments are the same in both years. The factor contributed 200 *l.*, a blood-relative 100 *l.*; a third partner 200 *l.*, a fourth partner 100 *l.*[1] Two members of the same family therefore owned half the capital; the four were men of considerable means, and closely associated in business for several years. Still another similar contract was drawn in 1205 by two members of of the same family with a factor, each contributing one-third of the total, 405 *l.* Altho the factor was a responsible man, as shown by the amount he was able to invest and by his name, the risk was greater than usual, since this is one of several cases in which the factor was allowed to carry or send the investments to Aleppo, the only one found thus far in which he was permitted to go to Damascus, and one of a very few in which he was allowed to proceed to Bougia or Ceuta before returning to Genoa.[2] Only one societas of several partners has been found in which the family arrangement was not evident; in 1191 a partnership was made between three men, each of whom contributed 44 *l.*[3] In all these contracts, the factor supplied one-third of the capital. It is significant that in every case but one, at least two of the associates are of the same family, and own at least half the investment. The risk is unusual in only one societas, and even in that the family element is dominant.

The chief difference between the societas of several partners as practised in the middle of the century and toward the close lies in the reasons prompting their formation. In the earlier period, 1154 to 1164, the divided risk seems to explain the use of this form. In the later period, 1179 to 1206, while the element of risk is not wholly negligible, the societas of several partners is not only the principal form of societas surviving, but it is mainly used for family combinations of capital in fairly large sums; brothers, widows, minors, of the same family throw their interests into one for greater convenience and possibly for greater advantages in profit.

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[1] Not. Gugl. Cass., ff. 215, 245 v.

[2] Ibid., f. 267. The partners are of the families de Mari and de Castello.

[3] Ibid., f. 52 v.

(2) Frequently the factor, in addition to his investment of one-third in the societas, was able to carry with him a smaller sum of money, or amount of merchandise from his private property.[1] This circumstance was taken into consideration in the formation of the contract; and we may say that it was always there stated. The sum so carried seldom amounted to more than a few lire, in only two cases to more than 10 per cent of the total investment. In such cases, the contract was drawn in regular form; the factor received his usual one-half of the profits on the societas proper. Then followed the provisions with reference to the *super societatem* or *ultra societatem* as it is called in the documents. The factor was allowed all the profits on a sum so carried, but this sum must bear expenses per lira with those incurred by the societas. In other words he was not allowed to make gains at the expense of the societas; the investor was willing that the factor should carry money or goods in small amounts in this fashion, but insisted on an advantage to himself therefrom, — the reduction of the expenses per lira, and the resultant increase in the profits per lira. There is only one instance in which the amount carried by the factor in addition to the capital proper exceeded 30 or 40 lire. In 1161 Willielmus Buronus allowed Ido Mallonus to carry 132 lire outside of their capital of 600 lire.[2] The close business relations between these great houses made this arrange-

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[1] Ch. II, 354, 664, 672, 1106, 1113, 1115; Not. Gugl. Cass., f. 55 v.; Not. Ign., f. 87 v.

[2] Ch. II, 1115.

ment allowable, and of distinct advantage to both. At the moment Buronus may not have been able to invest an additional 264 *l.* to offset the sum which Mallonus had at his disposal. Presumably, the factor was allowed to employ this sum in common with that of the societas, thereby reaping to the full the advantages of trade, since in only one instance was he directed to bring it back separately invested from the societas, and then at his own risk.[1] This form of societas, fairly common between 1154 and 1164, is only twice encountered in the later period.

(3) Opposed to the contracts just reviewed, are those entered into by factors unable to produce capital equal to one-half of that at the disposal of the investor. An arrangement was then made enabling the investor to entrust his additional capital to the factor. Again the contract would be drawn in the regular form, the factor contributing as much as he could, the investor doubling this amount, the profits to be divided equally. By special provision the investor gave his surplus to the factor who agreed to carry it with the regular investment; expenses and profits were to be reckoned per lira, but the factor received at the division, one-fourth of the profits. This was a perfectly logical outgrowth of the simple societas: therein the factor furnished one-third of the investment, gave his time and labor, and received one-half the profits; thus when he took a sum from his associate, against which he was unable to place any money, he gave his time and labor and received one-fourth of the gain. Only a few instances of this are found in the decade 1154–1164. The variations in detail are interesting. In 1157 Jordanus de Domo, a factor, was able to invest only 15 *l.* in societas with Bonus Vasallus Caput Galli; the latter, aside from the

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[1] Not. Ign., f. 87 v.

30 *l.* which he placed in the societas, sent 103 *l.* with Jordanus, more than twice the amount of the entire societas, at a time when 100 *l.* was a considerable amount.[1] The next year we find a societas of 207 *l.* aside from which the investor was able to send so small an amount as 23 lire, 9 soldi, of a societas he had with another merchant.[2] Still more at variance with the normal arrangement is a contract of 1164; Michel, indentured [?] to Stabilis, entered into a societas with his master; he could furnish only 12 *l.* against his master's 24 *l.* but agreed to carry the whole amount to Syria for one-half the profits, under the disadvantage of no allowance for food and clothing (expense victus vel vestibus), because he also carried for Stabilis the handsome sum of 245 *l.* on which all expenses were allowed. The profits won on the 245 *l.* were not to be shared by the factor; his advantage lay in the great reduction in the expenses of his own investment per lira, which was so small that it was doubtful if he could place it to such advantage elsewhere.[3] Still another variation follows in 1164: Suplicius, in order to furnish 40 lire, one-third of a societas of 120 *l.* with Blancardus, was obliged to borrow 6½ *l.* of the latter, under the expectation of being able to return it from a sum due him before a year had elapsed. Blancardus loaned him the sum without stipulating interest; the customary contract for one-half profits was made; Blancardus then entrusted 140 *l.* to Suplicius, who agreed to carry it on condition that one-fourth of the profits should be turned into the profits of the societas before the division thereof.[4] He lost the advantage of one-eighth of the

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[1] Ch. II., 484.

[2] Ibid., 663.

[3] Ibid., 1470.

[4] Ibid., 1499. Goldschmidt, op. cit., p. 263, has noted this peculiar provision in Genoa and Marseilles, but views it in error, as far as the Genoese practise is concerned, as an attempt to secure a growing capital-account. It is true that this is the natural conclusion at first glance but he fails to take into consideration the fact that the societates in which this provision occurs were formed for a single voyage.

profits on the 140 *l.*, yet he was enabled to secure the advance necessary to make a desirable contract for trade. In all these cases the problem is simple: a factor in association with a merchant capable of doubling the factor's investment several fold.[1] The arrangement was profitable to both contracting parties.

(4) That the trade in Syria constantly demanded more investment than the factors who went east were able to supply at the ratio of 1:2, and that there was ample money in Genoa for this purpose, is clearly evident from the foregoing. Another form of societas makes this still more evident, that in which the factor was allowed by his partner to carry sums of money for others, entirely outside of their own agreement. Ogerius Aguxinus, about to depart for Syria in 1157 received permission from his partner, Petrus Eustachius, to carry with him what he wished, provided he registered the sums with Eustachius before his departure from Genoa.[2] We are unable to say what use Aguxinus made of this license, but in 1161, Otavianus, factor for (the same ?) Eustachius, contracted to go to Syria in societas; he registered 15 *l.* entrusted by one woman, 20 *l.*, by another, and 15½ from an unaccountable source; profits were to be reckoned per lira; one-fourth of the profits on the three sums carried *super societatem* was to be converted to the profit of the societas; at the final division of the profits the usual arrangement of equal shares was to be followed.[3]

The tendency so well marked in the ten years from 1154 to 1164, for the factor to gather up loose sums wherever possible to be carried super societatem, was the rule in the period after 1179. Scarcely a societas was formed in that period in which the factor did not register one or several sums so carried; as many as five were occasionally recorded in a single contract, contributed by the investor and others, in amounts varying from 4 lire to 200 lire.[1] In this period, the rule was that the one-fourth profit invariably allowed on sums carried outside the regular investment of the societas should be converted into the profits of the societas before the division into two equal parts between the factor and the principal. The natural deduction is that as the factors utilized this privilege to increase their private profits, and as the practice grew, the investors felt obliged to restrict the amount of the profit made partly at their expense by the factors. In this later period the sums carried by the factors super societatem even if supplied by the investors, were subject to the same provision. Occasionally the provision is omitted, whether by inadvertence or with the understanding that it was to be enforced, we cannot say.[2] All sums carried super societatem, unless it was otherwise stipulated, bore expenses and profits per lira with the whole amount carried.

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[1] Other examples of this group: Ch. II, 1104; Not. Lanfr., reg. I, f. 143 v., (1184); Ibid., ff. 95, 96, (1186); Not. Gugl. Cass., ff. 13 v., 17, 53, 58 (1191); Not. Ign., f. 163 (1200); Not. Gugl. Cass., f. 218 (1203); ff. 243, 265 (1205).

[2] Ch. II, 441.

[3] Ibid., 1104.

The advantages of this form of investment to men and women of small means are evident; nor was it without advantage to the societas proper, the profits of which were accordingly increased. This is further evidenced by the fact that in the majority of cases the money or goods carried super societatem, were employed in common with that of the societas. Only occasionally was it stipulated that separate investment was to be made.[3] The fact is that the super societatem had become so fixed a feature of the Syrian trade, as no

[1] For example, Not. Gugl. Cass., f. 53.

[2] For example, ibid., f. 53.

[3] Ibid., f. 53; Not. Lanfr., reg. I, f. 143 v.

doubt of Genoese trade in other parts, that it had already been assuming a special form and name, that known as the *accomendatio*, of which much will be said later.

Aside from the four main variations of the societas described above, several less important forms are found. Most exceptional are the societates in which there is more than one factor. Only one indubitable example can be cited. It is a societas formed in 1205, with a small capital of 30 lire. The two factors are brothers, about to go to Syria, able to supply of their combined resources 10 lire![1] Ugo Mallonus in partnership with Willielmus Filardus, in 1157, did not go abroad, but sent his sons, one to Syria with two-thirds of the capital, another to Sicily.[2] The societas between Ingo de Volta and Ingo Nocentius, described above as one in operation for several years between 1156 and 1161 offers an interesting variation in connection with this point. Nocentius formed a societas in 1156 with Alvernacius, using part of the capital of his association with de Volta; Alvernacius went to Syria therewith; Nocentius went abroad, possibly to Syria, in 1157 for the societas and was absent from Genoa a year; in 1160 he not only went to Syria again, but mentioned in a contract three men who were working as factors for him: Alvernacius who went to Syria in 1156 and apparently did not return long before September 1161; Lavorantis who went to Syria in 1157; and Guidotus Torsellus who was in Genoa intermittently during these years, may have gone to Syria, and certainly went to Provence in 1157.[3] This particular societas is exceptional in so many ways that it is perhaps not a fair type; still it illustrates the use of several factors under the direction of the principal, or in conjunction with him. In 1190 a contract was formed between two merchants, one of whom carried a part of the capital to Syria while the other went abroad where he pleased with the balance.[1] This is entirely exceptional in the Syrian trade.

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[1] Not. Lanfr., reg. I, f. 270.

[2] Ch. II, 457.

[3] See ante, p. 139, n. 1; also Ch. II, 447, 472, 689.

In the last years of the twelfth century a series of societates were formed for the Syrian trade in which the stipulation was made that expenses of operation were not to be allowed. Previous to 1190 only one such societas was found; it has already been described above and has no resemblance to this group.[2] There were eight *societates sine expensis* formed between 1190 and 1205. In six [3] of these the amounts involved were singularly insignificant, as low as 4½ lire in one case; the factors and investors were men of small means, whose family names tell us nothing; in two cases of these six, the factor and investor were brothers. It seems probable that these were all contracts made by common seamen about to go to Syria on one of the merchant ships, eager to clear a small profit on what ready money they had during the delay in Syria.[4] It was the custom in the Syrian expeditions to pay the mariners one-half their contracted wage before departure; unfortunately the contracts for the hire of mariners could not be found for this voyage. The remaining two instances involved more considerable sums; one was drawn between two brothers, which may explain the unusual provision.[5] The other contract allowed expenses on the societas proper, 75 *l.*, but not on the super societatem belonging to the investor, in amount 80 *l.*; it was not a bad bargain therefore for the factor altho unusual.[1]

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[1] Not. Lanfr. reg. I, f. 93 v.

[2] See ante, p. 146.

[3] Not. Lanfr., reg. I, f. 59; Not. Gugl. Cass., ff. 200, 208 v., 223 v., 266 v., 270.

[4] One case is of this character unquestionably; the factor promises to contribute 5 lire or 16 bes. Syrian, " quas debeo habere pro conductu." Not. Lanfr., reg. I, f. 59.

[5] Not. Ign. f. 161. The photograph of this document has not yet been received; it is singular in other ways which cannot be explained until the photograph has been studied.

Only one societas has been found in which expenses were advanced outside of the capital proper.[2] In 1190 Simon de Minuta formed a societas with a widow, Boneta Bancheria; she contributed 66 *l.* partly in merchandise, partly represented by her shares in the ownership of the vessel on which Simon was to sail. Simon supplied 33 *l.* to the association. The profits were to be divided equally. Boneta gave him 93 *l.* toward the expenses of equipping the vessel and sending it to Syria. If there was a residuum, above her share of the expenses, he was directed to invest it in their societas and in that which Simon had with another investor.[3] On what terms this was to be done, the record does not state. The arrangement suggests that Boneta was glad to have the factor receive a small bonus for managing an investment difficult for a woman to carry.

The restrictions placed upon the activity of the factor in the societas differ so slightly from those imposed in the accomendatio, that they will be discussed in connection with that form of contract. In the main, the societas was a very flexible form of business contract, modified from time to time, according to the personal desires and abilities of the contracting parties. It met the demands of the Syrian trade particularly well in the earlier years of the commercial development, when the conditions of trade were comparatively difficult and before many Genoese had acquired large personal experience in that phase of the foreign trade. In the decade 1154–1164 not only was the Syrian trade in the control of a few prominent families, but this same group of capitalists dominated the Genoese commerce in general. The concentration of the larger part of the available capital in the hands of a limited number of men impelled them to combine their interests in this form of association, dividing the risks in a trade still replete with possibilities of loss. As the century drew to a close, when the trade was enlarged, when more men versed in Syrian conditions were available, when the amount of capital for investment increased and was more widely distributed, as was the case after 1179 in Genoa, the societas failed to meet the requirements of trade as well as it had done in the past. It was gradually replaced by another form of contract, the accomendatio.

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[1] Not. Gugl. Cass., f. 224 v.

[2] Not. Lanfr. reg. I, f. 59.

[3] Ibid., f. 59.

II. The Accomendatio

The accomendatio was an association for trade of later origin than the societas, which it rapidly displaced in the Genoese trade with Syria in the last quarter of the twelfth century. The accomendatio was formed between two individuals only; one, the *accomendator*, contributed all of the capital and remained in Genoa; the other, the *accomendatarius*,[1] contributed no capital, but carried the investment of his associate abroad, paid his expenses therefrom, used the investment as directed or as opportunity offered. He then brought or sent the proceeds to Genoa, placed them in the hands of his partner, and received at the division of the proceeds, one-fourth of the profits. The distinction between the accomendatio and the societas is clear: in the societas, the factor owned one-third of the capital, bore one-third of the risk and received one-half of the profits; in the accomendatio the factor owned no capital, he assumed no risk; the investor owned all the capital and assumed all the risk. In the societas the factor and investor divided the profits equally: in the accomendatio the investor received three-fourths of the profits, the factor one-fourth. The ratio between capital, industry, risk and profits remained the same in both associations.[1]

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[1] These expressions were not commonly used in the period under review; following the practice used in the discussion of the societas the terms investor and factor will be used here for the sake of simplicity; this can be done with greater exactitude than in the case of the societas.

This form of association is found in the Genoese trade in the first decade in which we can study the commercial institutions, 1154–1164. It was decidedly secondary to the societas in importance, particularly in the Syrian trade. In fact the name accomendatio was not yet in general use. The expression accomendatio [2] was often applied to this form of association but not in the contracts for trade with Syria: there it is once described as societas ad quartam proficui; [3] in all other contracts no definite expression was used; the factor simply acknowledged that he had taken so much money or merchandise from his associates for trade on an allowance of expenses and 25 per cent of the profits.[4] While the accomendatio appeared early as a separate institution originating in the more widely utilized societas, it seems to have achieved its first stage of development as an adjunct of the societas under the form of super societatem. As the societas came to be used almost entirely with sums carried super societatem, the expressions, accomendatio and super societatem were used interchangeably in contracts drawn primarily for the formation of a societas; both expressions are found in the same contract, applied to sums of money carried under identical conditions.[1] After 1179, the accomendatio achieved a free development as a distinct form of association, and rapidly displaced the societas as the dominant form in the Syrian trade.

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[1] Goldschmidt's statement, op. cit., p. 255, that the classification of the association according to the changing measure of the capital and industry is poor, does not hold for the associations in Genoese practice when the entire twelfth century is considered. Goldschmidt's knowledge of the Genoese associations was confined to the single period 1154–1164, when the accomendatio had not been fully developed. It is true as he says, p. 261, that the expressions societas and comendacio were occasionally used indifferently in this early period in Genoa for the same sort of association; even later when the accomendatio had reached a distinctive position this confusion is sometimes observed, but that it was regarded as an error is indicated by the fact that the notaries often altered the reading in the record by cancelling the word incorrectly used and substituting the other. Not. Gugl. Cass., ff. 201, 218. Goldschmidt's classification of both forms as comenda is therefore not exact for the Genoese practice. Lastig's classification, Die Accomendatio, p. 76 ff., is better, except that he fails to appreciate fully the relation between the societas and the accomendatio, due to his reliance for Genoese practice upon the published records of 1154–1164, and to the broad scope of his work within a very small compass. Schaube, op. cit., pp. 110–111, has the distinction more clearly drawn in two paragraphs.

[2] With various spellings of course. Ch. II, 301, 1370, etc.

[3] Ibid., 426. [4] Ibid., 414, 472, 486, 617, 1504.

In the Syrian trade between 1154 and 1164 only six such associations were formed.[2] It is interesting to note that in this period, when the capital of the societas was almost invariably in money, the basis of four of these six associations was merchandise, cloth of various sorts and fur.[3] The accomendatio was much more adaptable to the export of merchandise than was the societas, unless both partners in a societas for trade abroad possessed stocks of the same kind of wares.

In four of the six cases there are special circumstances surrounding the transactions which make them unusual even as accomendationes. Ribaldus Saraphie, the factor in one case,[4] was a man of great means in Genoa, a shipowner and money-lender, with trade interests in various parts of the West in 1155 and 1156.[5] In the autumn of 1157 he went to Syria, probably for the first time, since his trading interests there are subsequent to this voyage.[1] He was not at all the usual type of factor, but rather that of the investor of this period, although his family was not of official rank nor was he within the limited group that controlled the foreign trade of this period. He may have gone to Syria to look over the ground, preparatory to his subsequent investments in the trade. With him he took a large quantity of cloth belonging to Blancardus, on the understanding that he should receive one-fourth of the profits; expenses were to be allowed per lira, with what other sums we do not know, unless Saraphie carried capital of his own, which is very probable, since he loaned 40 lire to another merchant going with him to be repaid within one month after their arrival in Syria with 50 per cent interest, or within one month after their return to Genoa with 100 per cent interest![2] The shrewd Saraphie made this arrangement with Blancardus, the owner of the cloth, as a means of reducing his expenses for the voyage. In another instance, Ugo Mallonus, the partner of Willielmus Filardus in a societas for trade in Syria, permitted his son Rubaldus, who went east in his father's place, to carry a small amount of cloth belonging to Filardus, for one-fourth of the profits; expenses were reckoned per lira with the capital of the societas, but Rubaldus received the one-fourth profits on the accomendatio; this was purely a family arrangement, satisfactory to Filardus as well.[3] The third case is that of a young man, Ogerius de Amico, who went to Syria in 1158 with the intention of remaining there for some time. With his father's consent, he took 71½ *l.* from Willielmus Ventus to be invested and the proceeds sent to Genoa; Ogerius is not heard of again in Genoa for six years; apparently his father collected the 25 per cent agreed upon in the contract.[1] Another association for trade in Syria for one-fourth profits was made in 1157 by Willielmus de Razedo as factor, with Willielmus Buronus as investor; the consideration was 263 *l.* 13 *s.*, in merchandise probably. Razedo was going to Syria for a protracted stay; he assumed the entrusted sum with a solemn oath on the Gospels to act in good faith, to commit no fraud, and to do therewith as Buronus should direct him by letter or by agent. In all respects this is an unusual contract, nor do we know that Razedo ever returned.[2]

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[1] Not. Lanfr., reg. I, f. 95; Not. Gugl. Cass., f. 243; These are particularly good illustrations of both expressions used in the same contract.

[2] Ante, notes 3 and 4.

[3] The basis of the other two was probably merchandise: the investors were men of great wealth, Willielmus Buronus and Willielmus Ventus, two of the leading men in Genoa and they entrusted odd sums to the factors in these instances, 263 lire 13 soldi, and 71 lire 10 soldi, whereas their investments were usually expressed in round numbers of lire.

[4] Ch. II, 414.

[5] Ibid., 267, 295, 334, 335, 336, 365, 371, etc.

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[1] Ch. II, 907, 1180.

[2] Ibid., 419.

[3] Ibid., 457, 486.

The other two associations were more typical of the accomendatio as it soon came to be generally used. Laborantis, a man of no means apparently, beyond what he earned as a factor for well known merchants, in 1157 agreed to convey a quantity of fur to Syria for Willielmus Filardus, for expenses and 25 per cent of the profits.[3] In 1164 one Novellonus, on the same basis, took to Syria for one Elia, cloth worth 32 lire, 16 soldi; neither individual can be further identified.[4]

The accomendatio in this decade was therefore not only most unusual in Syrian trade; it was largely confined to the export of merchandise; in most cases the circumstances surrounding its use were exceptional, nor was the very name of the association yet fixed by common usuage.

When the accomendatio had assumed a definite form and an important position in the Syrian trade, from 1179 onwards, some general characteristics developed which display its advantages over the societas and help to explain its extensive use. A factor going to Syria was allowed to carry as much money or merchandise in accomendatio as he pleased, was able to assemble, or felt he could negotiate with ease, dependent upon his reputation, ability, and the length of time he expected to remain in Syria. The consent of one investor was not necessary to the assumption by the factor of funds in accomendatio from others. This was made possible by the insertion in the contract of the clause providing that the amount given in accomendatio should bear expenses and profits per lira with all other property carried by the factor.[1] Factors are found to have made many contracts with no other safeguard to the individual investors than this provision;[2] it was apparently considered sufficient in a commercial community where the merchants knew each other's standing well. Of course it often happened that the individual investor was aware of the extent and number of the sums in accomendatio carried by the factor. Presumably he knew this often through private channels; the records of the notaries were available at any time. Frequently several of the investors came before the notary with their factor at the same moment; then their contributions were accepted by the factor and registered in one entry by the notary;[3] or if the contracts were drawn singly, the investors acted as witnesses to each other's agreements with the factor.[1] On the other hand, when the factor carrying sums in accomendatio was also a partner in a societas, the assent of his associate in the societas was secured.[2] This was necessary since in that case the factor was ordinarily obliged to turn the 25 per cent profit on the accomendatio into the societas before the division of the profits of the societas.[3] The assent of the factor's associate in the societas was usually given for each accomendatio individually, by the partner or his agent; in one contract for a societas, the factor was given permission to carry what sums in accomendatio he would, provided he received one-fourth of the profits thereon, and turned such gains into the societas before the final division thereof.[4] This blanket clause is only once found but illustrates the principle clearly.

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[1] Ch. II, 617, 1354.

[2] Ibid., 426. The oath was used only in associations formed for several years or for several voyages. Cf. Ch. II, 668, 792, 822, 1113.

[3] Ibid., 472.

[4] Ibid., 1504.

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[1] This clause is almost invariably inserted in all contracts for the formation of accomendationes after 1179 and even when omitted, it was apparently understood as effective: Ansuixus de S. Genesio assumed two accomendationes in 1191; the clause is inserted in one contract but not in the other. Not. Gugl. Cass., ff. 46, 54. Often the clause is abbreviated to read simply "expensas per libram (cum aliis quas portat ?)" Not. Gugl. Cass., ff. 55 v., 57.

[2] Honoratus Boletus, two, Not. Gugl. Cass., ff. 53, 53 v.; Bufarus Saragus, two. Ibid., ff. 55 v., 57; Simon de Bulgaro, five, Not. Ign., f., 162 (different investors probably assembled in Simon's house), f. 164; Petrus Silvanus, four, Not. Gugl. Cass., ff. 213, 244, 244 v., 256; Bonusvasallus de Nepitella, seven, Ibid., ff. 250 v., 254 v., 262, 270 v., 271, 272; Willielmus de Pallo, four, Ibid., ff. 242, 266, 268 v., 273 v. An exception is found in 1200, when Fulco de Dodo secured the consent of Willielmus Embriacus to carry cloth worth 127½ lire in accomendatio of Simon de Rivalgarius; but the Embriacus family was always more explicit and formal in its commercial dealings with others than was usual in Genoa at this time.

[3] Not. Gugl. Cass., f. 53 (four sums in one contract), ff. 245, 257, 258, 268.

The provision in the contracts for accomendationes that the amounts given should bear expenses and profits per lira with all other property carried, also enabled the factor to carry sums of his own without registration thereof unless the amount was very large.[5] Of course the investor usually knew the financial status of the factor and the approximate amount he could afford to carry for himself. After 1179, when the accomendatio was so widely used, the expansion of the Syrian trade and the loss of the monopoly by the great families created opportunities for men of small means skilled in trade. The factors as a rule were not men of great wealth, or of high position in Genoa, as was the case in the earlier period.[1] Their reputation as traders in this difficult phase of Genoese commerce meant something to them. Hence this simple safeguard afforded ample protection to the investors.

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[1] Willielmus Scotus, Not. Gugl. Cass., f. 225 v. (three contracts); Paganus Gallus, Ibid., f. 267 v. (three contracts); Detesalve de Platealunga, Ibid., f. 226 (three contracts).

[2] Not. Ign., f. 20 v.; Not. Lanfr., reg. I, f. 95; Not. Gugl. Cass., ff. 108, 118 v., 216 v., 220 v., 225, 225 v., 243 v., 253 v.

[3] Ante, pp. 147, 148.

[4] Not. Gugl. Cass., f. 243.

[5] That the factor carried money or merchandise of his own without registration may be deduced from the permission given him by the investor to do with the investor's money as he does with his own. Not. Ign., ff. 12, 20 v.; Not. Gugl. Cass., ff. 53, 271. For registration of large amounts carried by the factor for his own profit: Not. Gugl. Cass., f. 53 (133 lire), f. 226 (132-½ lire), f. 245 (30 lire ?), f. 245 (91 lire), f. 266 (25 lire); Not. Ign., f. 162 (700 lire).

Another general consideration in connection with the accomendatio was that it was formed solely for one voyage to Syria and return, although the length of the stay in Syria might well be more extended than the few months elapsing between the arrival of the ship and the departure thereof some three or four months later. Many of the factors toward the end of the century remained in Syria several years. This need not imply that they retained the capital and used it throughout the period, because at this later time it was often provided that the factor could send the proceeds to Genoa with reliable witnesses;[2] merchandise was often shipped to Genoa by the factor who remained in Syria.[3] Occasionally the factors were allowed to make one voyage from Syria to another region of Genoese trade before returning to Genoa.[4] Still the normal accomendatio was for one voyage and direct return to Genoa within a reasonable time. Some of the exceptions to this rule are interesting enough to demand attention. Simon de Bulgaro, a well-to-do merchant, went to Syria in 1200, carrying sums entrusted in seven accomendationes in addition to 700 lire of his own property. He departed with the intention of remaining in the East for some years.[1] In one of the contracts he made before leaving Genoa, he agreed with the investor that he would make a reckoning of the profits at any time in Syria, with the investor or the investor's agent, and turn over the capital and profits at once.[2] In the same year Oto Judex de Castello went to Syria under contract to manage the large holdings of the Embriaci family in Acre for two years.[3] He took with him, in accomendatio of Willielmus Embriacus major, 200 lire which he was directed to employ during his term of service, bringing the proceeds to Genoa upon his return. All expenses in connection with this fund were to be allowed; Oto should receive the usual one-fourth of the profits.[4]

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[1] It is not possible to present the data on this point at the present time. A special study of this change will be made later. The facts are apparent to any reader of the documents of the period.

[2] Some departed with this intention: in 1191 several factors stipulated that they be permitted to send the proceeds of their transactions to Genoa. Not. Gugl. Cass., ff. 53, 53 v., 91, 105 v. Also in 1198, Ibid., ff. 108, 108 v., 118 v.; in 1200, Not. Ign., f. 164; in 1201, Not. Gugl. Cass., f. 171; in 1203, Ibid., ff. 201, 206, 207 (possibility of remaining in Syria explicitly mentioned), 208, 209 v. The majority of the contracts in 1203 and 1205 contain this permission, which was not a mere legal formula, since the notary occasionally inserted and then erased it. Not. Gugl. Cass., ff. 220 v., 266.

[3] This follows naturally from the permission to send the proceeds to Genoa. Receipts for goods so shipped are also found. Not. Ign., f. 31; Not. Gugl. Cass., ff. 26 v., 79 v.

[4] Not. Lanfr., reg. I, f. 139; Not. Gugl. Cass., ff. 36, 47, 53, 56, 108, 161, 164, 243 v., 246, 268, 271 v., 272.

As was the rule with sums carried super societatem the factor was allowed to use his own judgment in the investments. In most cases he apparently used all the sums in common and arranged a settlement with each investor upon the return. Frequently the investor stipulated that his investment was to be employed and brought back separated from the general stock of merchandise which the factor carried from Syria to Genoa.[5] This provision was probably inserted when the investor had a preference in the sort of merchandise to be imported from the East. Such preferences while never stated in the contracts may well have been given privately to the factor in such cases.[1]

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[1] Not. Ign., ff. 162, 164. He was still in Syria in 1203, when his wife sent him money and merchandise. Not. Gugl. Cass., f. 207.

[2] Not. Ign., f. 162.

[3] Ibid., ff. 160 v.–161.

[4] Ibid., f. 160 v.

[5] The custom was to allow the factor to use his own judgment. Sometimes he was instructed to bring back the proceeds invested in common with that carried by him for others. Not. Gugl. Cass., ff. 53, 216 v., 253 v., 267, 292 v., 293, 293 v.; or invested separately, Not. Lanfr., reg. I, f. 95; Not. Gugl. Cass., ff. 53, 105 v., 256, 257 v., 261 v., 269, 269 v., 272.

These are the general features of the pure accomendatio to which the great mass of the contracts formed between 1179 and 1206 conformed.[2] There were variations, however, in the form of the association due to personal influences, to the financial situation of one of the contracting parties, or to the demands of interests already formed in Syria.

The first series of variations is based upon the differences in the stipulations with reference to the amount or proportion of the profit to be received by the factor.

Three contracts are found under which sums were carried in accomendatio in return for one-third of the profits. The most striking of the three is the association formed for the autumn voyage of 1191 between Obertus de Josberto and Josbertus (his father ?). Obertus assumed 504 lire, a very large sum, which he agreed to carry to Syria, giving a solemn oath to attend, save, guard and operate the investment in good faith and not to defraud his partner beyond 20 soldi (!) nor to loan the money to anyone except a merchant with good security.[3] Upon his return, the younger Josbertus should receive one-third of the profits, but the older Josbertus admitted that 36 lire of the capital belonged to the younger. This was a liberal agreement, savorimg of a societas, altho the capital was carried in accomendatio. Similarly in 1205 Marchus, son of Willielmus Barbavaira, the draper, took in accomendatio of his father, 35 lire, 3 denarii for one-third of the profits.[1] The third instance of this kind was an accomendatio of 10 lire for one-third of the profits between two individuals of whom we know nothing further; the personal relationship which underlies the other two is not visible.[2] Apparently this form of accomendatio was infrequently used and only when the personal relations between the partners dictated the terms.

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[1] One commission to purchase cinnamon up to 600 besants in value was given in 1191, but the arrangement was not made in accomendatio. Not. Gugl. Cass., f. 55.

[2] In all several hundred of this type have been found.

[3] Ibid., f. 53.

A single contract in which the percentage of profits is not stated definitely, was one of those made by Simon de Bulgaro for his voyage in the autumn of 1200. He carried for Willielmus Silvaticus 32 lire invested (*mixtas*) in common with his own. He agreed to give Silvaticus the same profit per lira as that made on his own capital.[3] Again the arrangement is so peculiar that we are led to conclude a personal element is involved which cannot be traced. The two merchants owned a stock of goods in common of which Simon planned to make disposition in Syria on terms favorable to Silvaticus.

The last group of this series in which the variation lies in the division of the profits, is made up of about thirty contracts for accomendationes on which no profits were to be allowed to the factor. Five of this group cover small sums carried in accomendatio on which the usual one-fourth may have been allowed, but the provision is not given in the contracts;[4] several of these contracts are for sums so small, 2 lire, 4 lire, 10 lire, etc., that we may assign them to common seamen and their friends;[5] a few others for sums between 30 lire and 40 lire were probably carried for one-fourth profit, with an error of omission by the notary.[6] For the remaining contracts of this group, we are on more certain grounds. Two sums carried in accomendatio for no profit are entrusted to factors by members of the clergy; the amounts are small, 10 lire and 12 lire; these are two of three contracts found in which the clergy invested in this trade; unfortunately we know nothing of the factors in these two instances.[1] Numerous factors, of good standing, carried money and merchandise of small amounts in accomendatio, *gratis* or *per amore,* for their female relatives, or for the wives and sisters of their friends and associates.[2] The amounts of money are always small, from 2 lire to 18 lire. The merchandise thus carried was invariably the handicraft of the women concerned, embroidered clerical vestments, cloaks, etc., which apparently met a ready sale among the colonists or clergy in Syria. The remaining half dozen accomendationes carried gratis were undertaken by factors for family connections, not always of small amounts, but usually by factors well supplied with other sums. Henricus Streiaporcus in 1205 carried in accomendatio gratis for Drua, his mother, 200 lire belonging to him and his brother, of which the mother still retained control, and 28 lire of her property.[3] Similarly, Paganus Gallus, not yet in possession of his share of his deceased father's estate, in the same year, carried in accomendatio gratis of his mother and his guardian 100 lire from the inheritance of his brother and himself; his mother gave him 50 lire of her patrimony on an allowance of one-fourth of the profits.[4] Willielmus de Pallo went to Syria in 1205 as factor in several accomendationes and carried 200½ lire gratis for his brother.[5] A more interesting case is that of Simon de

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[1] Not. Gugl. Cass., f. 270.

[2] Ibid., f. 15.

[3] Not. Ign., f. 162.

[4] Not. Lanfr., reg. I, f. 143 v.; Not. Gugl. Cass., ff. 243 v., 257, 262 v., 272.

[5] Ante, p. 150.

[6] Ibid., ff. 245, 267 v., 268 v.

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[1] Not. Lanfr., reg. I, f. 59; Not. Gugl. Cass., f. 201; Ch. II, 1080.

[2] Not. Lanfr., reg. I, f. 143; Not. Gugl. Cass., ff. 118, 213 v., 216, 243, 246, 252, 268 v., 273.

[3] Ibid., f. 273.

[4] Ibid., f. 267 v.

[5] Ibid., f. 273 v.

Bulgaro and his sister Sibelia, in 1200.[1] Simon went East to remain two years; he carried for Sibelia 150 lire for the usual 25 per cent; in addition, he carried for her *gratis et amore* 151 lire; out of the proceeds of this fund were to be paid all the expenses of Sibelia's son, Marinus, who accompanied Simon for the sake of experience in the Syrian trade, possibly in order that he might become an agent for his mother. Simon was willing to forego his usual 25 per cent partly as a favor to his sister, but he probably found the youth of service to him as well.

These accomendationes in which the factor's profit varied from the normal 25 per cent, while numerous and interesting, were invariably drawn under unusual circumstances, between family connections for the most part. In all cases where the amount was large the expenses of the factor were reckoned per lira with all others carried, even sums on which he agreed to accept no profit.

Another series of accomendationes are found on which no expenses are allowed. A score of these contracts were apparently made by mariners with their friends and associates; the amount of capital in these cases varies from 2 lire to 20 lire; in most cases it is below 10 lire.[2] In one instance a priest entrusts 2 lire to a factor sine expensis.[3] More interesting is the case of Johannes, indentured (?) to Ansaldus Fornarius, who was sent to Syria by his master in 1205, carrying 30 lire, 10 soldi, 9 denarii for Ansaldus and his wife, sine expensis.[4] He was directed to go with one Petrus Silvanus, wherever the latter, a factor carrying several hundred lire for various investors,[1] might go for trade in Syria; probably there was an agreement with Silvanus which would explain where this servant's expenses came from; he may have been taken by Silvanus as an assistant. Servants of factors occasionally sent a small sum in accomendatio sine expensis.[2] Only one contract involving a large sum carried without expenses is found, an agreement to carry 94 lire for which no explanation offers, since the factor is otherwise unknown; were he a ship-owner the situation would be plain.[3] The accomendatio sine expensis was exceptional. Except when the evidence leads to the supposition that the factors were seamen, the personal relation between the associates is significant, as has been shown to be true in the accomendationes in which the profit allowed to the factor varied from the normal 25 per cent, and in the societas sine expensis. In all accomendationes sine expensis the usual 25 per cent was granted except in one case when the factor's servant sent 33 soldi with her master.[4]

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[1] Not. Ign., f. 162. See also, ibid., f. 6; Not. Gugl. Cass., ff. 53 v., 262.

[2] Not. Ign., f. 15; Not. Gugl. Cass., ff. 213, 216, 218 v., 219 v., 223 v., 224, 244 v., 246, 246 v., 247, 249 v., 260 v., 264 v., 265 v., 272, 272 v., 293 v.

[3] Ibid., f. 201.

[4] Ibid., f. 273.

Conditional accomendationes are occasionally found after 1179, in which the investor entrusts money or merchandise in accomendatio to factors going to Syria, to be turned over to a specified merchant in Syria. The consignor of the goods is sometimes the wife or business associate of a merchant engaged in trade in Syria. Anna, wife of Simon de Bulgaro who left for Syria in 1200, sent to him in 1203, 183½ lire, invested in cloth, 16½ lire in money, entrusting the whole to Johannes Bancherius in accomendatio.[5] Three partners of Bernition Scotus sent 284 lire to him in 1191 in accomendatio by the son of one of them.[1] The conditions are usually clearly stated:[2] the factor was bound to deliver the merchandise or money to the person named, if that individual could be found, or if the consignee were willing to accept it. Apparently the goods were sometimes shipped on an order from Syria; sometimes this must have been done without an order, when the consignee was allowed to refuse to receive the consignment. In one case the goods were shipped at the risk and expense of the merchant in Syria, which clearly implies an order. If the consignment was rejected in Syria, or if the consignee could not be found, the factor was directed to employ it in trade under the usual terms, expenses and 25 per cent of the profits. Presumably the expense of transportation was borne by the consignee, if the goods were turned over to him, altho only one contract specifically provides for this. If the consignee rejected the goods or was not found by the factor, the expense would naturally be reckoned per lira as in other cases. These contracts for accomendationes with consignments illustrate the development of the accomendatio to a point where it could be utilized for many different purposes.

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[1] Not. Gugl. Cass., ff. 244, 244 v., 256.

[2] Not. Lanfr., reg. I, f. 136 v.; Not. Gugl. Cass., f. 293 v.

[3] Not. Ign. f. 17 v.

[4] Not. Lanfr., reg. I, f. 136 v.

[5] Not. Gugl. Cass., f. 207.

Another use of the accomendatio which was not uncommon in the trade with Syria, after it had developed so extensively, further displays the superior flexibility of this form of association. Debts owed by men in Syria to residents of Genoa were collected by reputable factors going to Syria, under contracts made with the creditor in Genoa. The creditor authorized a factor to collect the debt for him, and directed the factor to take the amount collected in accomendatio, to use it in trade as he saw fit. Upon the return of the factor to Genoa, expenses of the factor incurred in trade with this sum should be reckoned per lira with other amounts carried, and the factor should receive 25 per cent of the profits. No provision or allowance for expenses or effort in the collection of the debt was made.[1]

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[1] Not. Gugl. Cass., f. 53 v.

[2] Not. Lanfr., reg. I, ff. 96, 132 v.; Not. Gugl. Cass., ff. 53 v.; 56 v., 207, 210 v.

The last variation of the accomendatio to be described is the least frequently encountered; only five instances have been found.[2] These were associations in which the factor made a deposit of money with the investor before leaving Genoa with the investor's merchandise. The merchandise was cloth in every case but one. The amount of the deposit ranged from 33⅓ per cent to 67 per cent of the value of the goods. The factor was directed to deduct the amount of his deposit from the proceeds of the sale of the goods in Syria; since the deposit was made in Genoa in lire, and had to be deducted in Syria in besants, the ratio of besants to lire at which the deduction must be made was stated in the contract; it was the usual ratio of the time, including no interest. After deducting the amount of the deposit, the factor was permitted to employ the balance of the proceeds of the sale in trade in accomendatio for 25 per cent of the profits of the whole transaction. The factor lost the use of his deposit for several weeks or months and received no interest, nor was he the recipient of any unusual favor in the accomendatio to be formed with the proceeds of the sale. The question then arises of the reasons for the peculiar arrangement. Two of the contracts were undertaken in 1184 by Oglerius Rapallinus de Capiti, a factor, with Gualibertus Verante in one instance and with Zuchellus Verante in another. In both cases Oglerius furnished guarantors for his integrity, which in connection with the deposit implied lack of confidence in him by the Verante; moreover Oglerius agreed not to charge expenses on the goods, provided the investors paid all duties. Two similar contracts of this sort were entered into by a young factor, Willielmus de Astur, under the direction of his father, with Willielmus Bellus de Castello; again the suggestion arises that the youth or inexperience of the factor underlies the requirement of a deposit, and that his father was the guarantor. But the fifth contract of this character was made in 1200 by Simon de Bulgaro, whose ability and integrity could not be questioned. The explanation seems to lie therefore in one of two other directions than lack of confidence in the factor: either the investor could not bear the entire risk of loss under a simple accomendatio, and required the deposit in order to divide the risk; or else the investor was shipping to Syria his entire capital in cloth, and required the deposit as a means of continuing his trade in Genoa. It is this last explanation which answers all the questions, since the divided risk could have been secured by forming a societas.

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[1] Ch. II, 1108; Not. Gugl. Cass., ff. 56, 273.

[2] Not. Ign., f. 164; Not. Lanfr., reg. I, f. 139; Not. Gugl. Cass., ff. 212, 224.

The accomendatio displaced the societas as the favorite association for trade with Syria in the last quarter of the twelfth century by reason of certain changes that had occurred in the character of the trade, and because of certain inherent features of the accomendatio which made it more adaptable to foreign trade in general toward the end of the century. In the first period of the Genoese trade with Syria, of which we may take close cognizance, 1154–1164, the trade was practically monopolized by a few of the leading commercial Genoese families. The trade was not at that time an export business in any noticeable degree. The great merchants invested money in Oriental wares purchased in Syria, to be sold in Genoa and to be distributed throughout the West along avenues of trade already well laid down by the Genoese. The risks encountered were greater about the middle of the century than they were twenty-five years later when the commercial conditions in Syria were much more clearly understood. The commerce to be profitable required large amounts of capital represented by cash; Genoese exports were not yet in demand in Syria. The risks were great enough to warrant the division thereof among two or more investors. The very youth of the trade and the small number of people engaged therein prevented the average individual from risking his capital, even if competition with the great merchants would have made it profitable. The societas met all these requirements of the trade in the early epoch.

In the last quarter of the twelfth century and the opening years of the thirteenth, these conditions were altered. The great families had been unable to retain their grasp on the rapidly expanding Genoese commerce with Syria and other regions. The trade with Syria had become much more of an export trade than in the earlier period, altho cash still went East in large masses to bring back to Genoa the precious goods of the Orient. Men with little money, and a stock of desirable wares engaged in the trade. The risks were less; individual merchants could afford to assume the entire risk without forming a rigid partnership with another for the purpose of dividing the possible losses. With the growth of the Syrian trade and Genoese commerce in general, a class of men had grown up who were skilled in trade abroad, who probably spoke foreign dialects, and were eager to secure the use of capital or merchandise they either did not possess or could not produce. The accomendatio better suited all these conditions than did the societas.

The century of commercial expansion had produced goods and money in large quantities; it had produced a class of men versed in trade; the two elements, capital and industry, found their best combination in the accomendatio.

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CLIMATIC CHANGE AND AGRICULTURAL EXHAUSTION AS ELEMENTS IN THE FALL OF ROME

SUMMARY

I. Decline in Roman agriculture, 173. — Contrasted views, 175. — Liebig and Simkhovitch on exhaustion of soil, 176. — Conrad on climatic change, 177. — II. Four climatic hypotheses: (1) Uniformity, 178. — Geological view, 178. — Historical view, 179. — Ancient famines, 180. — Water works, 181. — Cyrene, 181. — Ilandarin, 182. — Ancient vegetation and crops, 183. — (2) Local changes and deforestation, 185. — (3) Progressive change in one direction, 185. — (4) Pulsatory or irregular changes, 186. — III. Caspian Sea, 186. — California lakes and trees, 188. — Palmyra as an example of effect of climatic changes, 188. — Nature of such changes, 189. — Dates of changes in old world and new, 191. — IV. Historical effects of changes: (1) Economic results, agriculture, forests, cattle, 194. — (2) Political results, taxation, barbarian invasion, 198. — (3) Biological results, elimination of Nordics, increase of malaria, decline of physical energy, 201. — V. Climate and civilization, 204. — Conclusion, 207.

I

In history as in science the normal order is from obvious facts to hidden causes. The fact of the disastrous fall of Rome is so obvious that every intelligent person is aware of it. Its causes are so obscure that the world is still uncertain what they are. Among the many theories advanced in explanation of this great historical event, one of the most interesting is that of Liebig,[1] which has recently been admirably restated by Professor Simkhovitch.[2] According to the view of these two authors one of the fundamental factors in the fall of Rome was a marked decline in agriculture. We are told that in the days of the Roman Republic seven jugera, or about four and one-half acres of land, sufficed for the tillage required to support an average family. Agriculture was so intensive that farms of this small size, supplemented presumably by pasture land, supported a contented, self-respecting, and progressive population. The cities, all of which were small, reflected the sturdy independence of the country people, and naturally the government was modeled to fit the citizens who administered it. By the second century before Christ, however, a great change was apparent. Under Scipio in 196 B.C. grain began to be distributed from state granaries to poor citizens. Soon came the agrarian troubles with which the names of the Gracchi are associated. Seven jugera were no longer sufficient for the average farmer. Indeed, the farmers in many places were becoming poverty stricken. Instead of sowing their fields with a scientific rotation of carefully tilled crops, they were turning them over to pasturage. Cato declared that good pasturage was the best thing for a farmer, fair pasturage the second best, poor pasturage the third best, and ordinary field crops only the fourth resource. Pessimists declared that in their wheat fields the farmers reaped only four times the seed that they sowed. In later centuries, especially from the second century A.D. onward, conditions became still worse. Many farms were utterly abandoned, the land was concentrated in the hands of a comparatively few large proprietors. The tenants fell into chronic debt and were little better than slaves. So eager were many of them to escape from the thraldom in which their poverty kept them that they flocked to the cities, until laws were passed which bound them to the soil as serfs. All these and many other evil consequences appear to have flowed from a widespread decline in agriculture, which, tho alleviated at times, grew worse and worse until Rome finally fell.

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[1] Justus von Liebig, Die Chemie in ihrer Anwendung auf Agricultur und Physiologie. 9te auflage, 1876, pp. 51 ff. For this reference and others I am indebted to Professor Taussig.

[2] V. G. Simkhovitch, "Rome's Fall Reconsidered," Political Science Quarterly, June, 1916.

The difference between Roman agriculture in early and in later times has given rise to a warm debate. One side is represented by Durneau de la Malle.[1] As he put it: " A vicious system of agriculture, a biennial rotation, the ignorance of the methods of alternation of crops, the too frequent rotation of wheat on the same land, the insufficient and poor preparation of manure, the slight extent of artificial grasslands, the small number of animals supported on cultivated crops, the imperfection of the methods and instruments of culture, the vicious practice of burning the straw in place of converting it into manure — these and a hundred other deadly practices which it would be too long to enumerate form the conflicting but true picture which Greek and Roman agriculture on the whole present to us." Rodbertus[2] strongly contested this view. He attempted to show that the Romans had a most admirable system of agriculture, being familiar with the rotation of crops and the use of fertilizers, and that more labor was expended per acre than is now spent on the best fields of Germany. That there was agricultural decline he admitted, but he ascribed it to social causes. In the writings of such men as Varro, Cato, Pliny, and Columella he accepts the parts which indicate that the science of agriculture was highly developed, but says that other portions must be taken " cum grano sallis." He thinks the Latin writers have been misunderstood or that their statements can be explained by other circumstances. For instance, he supposes that when Rome was able to reach out and obtain grain from other lands the Italian farmers turned their attention to vineyards, olive orchards, and cattle raising, and only the worst fields in Italy were devoted to wheat. Hence it was not surprising that the farmers reaped only four times what they had sowed.

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[1] Quoted by Rodbertus in the paper cited below.

[2] Rodbertus, "Zur Geschichte der agrarischen Entwicklung Roms unter den Kaisern," Jahrbücher für Nat. Oek., vol. ii, (1864) pp. 213–19.

Professor Simkhovitch ably shows that these two views are not really contradictory. The picture painted by Rodbertus indicates the condition in the early days, when Rome was in her prime. The other presents the conditions of later times. Simkhovitch ascribes the difference to exhaustion of the soil. Such exhaustion, as he says, is not a necessary consequence of wrong cultivation, but arises only when unwise methods are pursued. As Van Hise[1] points out, the most crucial element in the exhaustion of the soil is the depletion of the phosphorus, which can be prevented only by abundant fertilization.

The idea that such depletion plays an important part in the decline of nations finds frequent expression. Fetter,[2] for example, expresses a not uncommon view when he says that in Asia " the effects of bad husbandry " have caused " lands that once supported millions of people, perhaps tens of millions " to become deserts. He even goes so far as to imply that the decline of Egypt as well as of Rome was due largely to this cause. No one, however, has stated this view more authoritatively than Liebig.

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[1] C. R. Van Hise, The Conservation of Natural Resources in the United States, 1912, pp. 322 and 338.

[2] F. A. Fetter, Economic Principles, 1915, p. 445.

The opponents of Liebig's hypothesis fall into two classes: these who, like Rodbertus, ascribe the fall of Rome to social and political causes, and those who believe that altho it was due to physical causes, exhaustion of the soil was only a minor factor. One of the first to expound this latter view was Conrad.[1] He was ready perhaps to accept Liebig's statement that "the productivity of the soil alone has caused the rise and fall of nations, and, in a word has made history," but not as it was meant. Speaking of Mesopotamia and the accounts given by Herodotus and Pliny of the marvelous grain crops in ancient times compared with the present sterility of the country, he says: "If we put with this fact the observation of Herodotus that the climate of Assyria was too moist for vineyards, one is led to the conclusion that a decrease of precipitation has taken place, that the present water supply and the present aridity did not prevail in antiquity — a conclusion which alone is enough to explain the present desert condition of the country." He also showed that there is similar evidence of a diminution of the water supply in Greece and elsewhere, while he thought that in Italy volcanic disasters and deforestation were great factors in causing historic decay.

In the half century since Conrad challenged Liebig's interpretation, our knowledge of the climate of the past has increased. Today there is a large body of evidence which seems to indicate that climatic changes have occurred during the last two or three thousand years, and that they may have caused many of the results which Liebig and Simkhovitch have ascribed to exhaustion of the soil. The fact of a ruinous decline of agriculture not only in Italy, but in many other lands, can scarcely be denied. Its consequences were clearly disastrous. If climatic changes may have been responsible for the decline, it is well to discuss the general problem of changes of climate before proceeding to a consideration of Rome specifically.

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[1] J. Conrad, Liebig's Ansicht von der Bodenerschöpfung, Jena, 1864.

II

Four chief climatic hypotheses have held the field. Their key words are (1) uniformity, (2) local changes, (3) progressive world-wide change in one direction, and (4) pulsatory or irregular changes sometimes in one direction and sometimes in another.

The evidence as to the climate of the past is primarily geological, even tho we are dealing with historical times. Ruins are to all intents and purposes fossils, while alluvial deposits, river terraces, old lake strands, the amount of salt in enclosed lakes, and the character of extinct vegetation and animals all belong primarily in the field of geology. Hence geologists are the men best fitted to weigh the evidence and to decide as to the climate of the past. The general attitude of the American geologists who have specialized in climatic studies may be judged from the following quotation from a letter written by Dr. W. D. Matthew in response to a series of questions sent out by the author: "As a geologist, accustomed to the concept of a changing earth, which must needs involve climatic changes, I should demand proof before I would admit that there had been *no* change within two thousand years. Such evidence as I know of points to considerable changes at various localities within the past few thousand years."

Altho geologists have abandoned the old idea of climatic uniformity, students in other lines are less completely in accord. Accordingly, let us examine the four hypotheses and see how they appeal to various kinds of students. The hypothesis of climatic uniformity is still held by a small minority of meteorologists. Their strongest argument is that altho the meteorological records of the past one hundred years show a constant recurrence of short cycles, they do not show any progressive change in one direction. Omitting rainfall records, which all admit to be too unreliable for accurate conclusions, they pin their faith to temperature. They forget that according to the best authorities on the glacial period the mean temperature of the earth at that time was possibly only 10° F. lower than at present, and certainly not more than 15° or 20°. As the last glacial period almost certainly culminated at least 20,000 years ago, and perhaps much more, the average change of temperature from that time to this cannot have exceeded a tenth of a degree per century. Early meteorological records are too few and inaccurate to permit us to detect a change of even half a degree in a century. Hence it seems scarcely allowable to use them as an argument in favor of a climatic uniformity, which geologists almost unanimously reject.

Among historians another type of argument is frequently advanced. They admit that the ruins of western Asia and northern Africa, the depopulation of the lands around the Mediterranean Sea, and the decline in agriculture and commerce in that region all look as tho they were the result of climatic changes. But appearances, they say, are deceptive. Misgovernment, pestilence, war, and the inevitable decay of an old civilization are the causes of these signs of decay. The value of this argument may be judged from the words of Professor

Simkhovitch.[1] "The steady shrinkage of population in the ancient world did not follow, curiously enough, in the wake of its bloodiest wars, but in times of complete peace. The fearful losses of Rome's greatest wars on the other hand, losses for instance occasioned by the Punic Wars, were rapidly made up, and in spite of further wars the population was steadily increasing. The same was true of the temporary decrease of population occasioned by a plague, Different was the situation in the period under discussion [that is, the period of the steady decline of Rome]. Losses occasioned by war and plagues were never made up, and during the longest and profoundest peace that Rome ever enjoyed the Roman population was steadily shrinking and its national strength steadily melting away."

One of the most forceful arguments in favor of climatic uniformity is the undeniable fact that in ancient times people suffered severely from aridity. The seven years' famine in Egypt during the days of Joseph is only one among hundreds of cases where ancient historical records prove that great distress arose from temporary failure of the crops for lack of water. To prove that people suffer from drought, however, proves nothing as to the average rainfall. Countries with an average of fifteen inches of rain per year suffer from famine if the rainfall is reduced to ten inches for a few years. In the same country a rainfall of twenty inches per year would cause famine if the average were thirty inches. Such a famine would be worse than the one caused by ten inches, for more people would live in the country when the rainfall was larger, and the suffering would be correspondingly greater. Hence altho the argument from famine proves unmistakably that there was less rain at a certain time than at some preceding time, it sheds little light on the relative amount of rain two thousand years ago and now.

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[1] V. G. Simkhovitch, "Rome's Fall Reconsidered," Political Science Quarterly, p. 226, June, 1916.

Another argument in favor of climatic uniformity is the Roman water works in Syria, North Africa, and elsewhere. Would the Romans ever have gone to such labor if they had not felt the pinch of aridity? Look at the tunnels of Kharga, the reservoirs of Cyrene, and a hundred similar works. Do they not prove that water was so scarce that every drop had to be hoarded? One can only answer that unquestionably water was scarce, but the case is like that of famines. Water may be scarce with a rainfall of ten inches or thirty. It all depends on how many people there are.

Let us examine two specific cases: Cyrene in North Africa, and Ilandarin in Syria. Professor J. W. Gregory has made a careful study of the water supply available at Cyrene both from the springs and the reservoirs. He thinks that in that dry climate the minimum allowance per day for each inhabitant is eight or ten gallons, for this would have to suffice not only for household purposes, but for cattle and flocks, and for the irrigation of gardens. Hence he concludes that Cyrene can never have had more than about 25,000 inhabitants, for he does not admit that the climate may have changed. The ruins, however, are of great size and magnificence, and suggest a population far in excess of 25,000. Dr. D. G. Hogarth, who is one of the best authorities on such matters, states that there is "surprisingly good" authority that Cyrene had at least 100,000 inhabitants.[1] This case is typical of scores. The natural interpretation is that the water supply was once more abundant than now. If it be assumed that there has been no change of climate, we must also assume that the historical and archeological evidence as to the importance of such places is misleading.

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[1] J. W. Gregory, Cyrenaica, Geographical Journal, vol. 47, p. 321, London, 1916.

Ilandarin is a striking ruin on the borders of the Syrian Desert fifty miles northeast of Homs. According to Professor H. C. Butler, the nearest water is now two hours away to the west.[1] Yet once Ilandarin was a large city, walled and containing at least ten churches whose ruins are still visible. Like other Roman towns it had its water works. A great reservoir stood at one end of the town, while near the center was a large bath located higher than the reservoir and therefore drawing its water from some other source. The city covered an area about a mile square. Its population, according to Professor Butler, must have been at least 20,000 and may have been 100,000. Its case is like that of Cyrene, only far worse — today water enough for not a single inhabitant, formerly enough for tens of thousands and for a wasteful institution like a Roman bath.

In order to reconcile such facts with the hypothesis of climatic uniformity, it is necessary to suppose that earthquakes may have diverted underground waters, or that there were formerly tunnels of great magnitude which have fallen into ruin and whose location is no longer known. If Ilandarin were the only case of the kind, such reasoning might carry weight. But it is literally only one among thousands scattered from Mongolia to Gibraltar, and from Texas to Arizona and Sonora. If ancient water supplies have been diverted from all these places, there ought to be great numbers of cases where the water is found in some new location not far away. But I know of no case where supporters of the hypothesis of climatic uniformity have even attempted to point out what has become of the water in any specific instance. Moreover, when the old aqueducts are diligently searched out and repaired, as at the oases of Kharga in the Libyan Desert and Palmyra in the Syrian Desert, the water that is forthcoming appears always to be utterly inadequate to the size of the ruins and to the labor spent on the ancient water works. Hence the logical conclusion seems to be that in late Roman times there was not indeed as much water as the inhabitants wanted, but much more than at present.

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[1] For a full statement of Professor Butler's views see "Palestine and its Transformation," Boston, 1911, p. 291.

The chief bulwark of the hypothesis of climatic uniformity is the evidence of vegetation. Again and again we are told the classical writings furnish abundant evidence that in the past the crops of a given country were in general the same as at present. Ignoring such plants as the famous medicinal herb known as sylphion, which once grew abundantly in North Africa, but has now completely disappeared, believers in climatic uniformity dwell on the vine and the palm. These two plants grow in areas which are almost mutually exclusive. Only in a narrow strip will both flourish together. This strip includes Palestine today, and included that country in classical times. A change of 2° or 3° F. in mean temperature would exclude the palm if the temperature were lower and the vine if it were warmer. Therefore, there has been no change of climate. This argument has seemed conclusive to many people, but it ignores two essential points. In the first place, in subtropical regions with winter rains and dry summers the crops are essentially the same whether the rainfall is fifteen inches or thirty. If there is doubt of this, compare the gardens and fields of Damascus with those of the western side of the Lebanon Mountains where the rainfall is at least twice as great. In Greece the rainfall on the west coast is twice as great as in Attica, but irrigated areas in Attica raise everything that is raised on the west coast. Therefore, the fact that the crops today are essentially the same as those of the past does not show whether the rainfall has increased or diminished. In the second place, the argument as to uniformity on the basis of vegetation ignores the conclusions of geologists. To the layman it may seem scarcely credible that a change of only 10° or 20° F. could shroud eastern North America in ice as far south as the Ohio River; but we must accept the decision of the specialists. If the climate two thousand years ago differed from that of the present one-tenth as much as today's climate differs from that of the glacial period, the fact would be of the utmost significance; yet it would involve a change of mean temperature amounting to less than 2° F. This would not exclude either the vine or the palm from Palestine, and would not be appreciable in such rough records of agriculture as have come down from classical times.

Taken all in all the hypothesis of climatic uniformity does not seem to be well grounded. It is directly opposed to the conclusions of geologists. The arguments in its favor, so far as they are based on temperature, are inconclusive because whatever change of temperature has occurred appears to be very slight. The arguments based on ruins are also inconclusive, because they depend merely upon the assumption that something may have happened to destroy the water supply; they offer no proof as to what has happened. The evidence afforded by famines and ancient waterworks fails like the other evidence in proving climatic uniformity. It proves that in the past some periods have been drier than others, but it does not prove that the average conditions then were the same as now.

If the preceding discussion is sound, we must conclude that climatic changes have taken place during historic times. The next step is to choose among the three types of change, namely, local changes, a progressive or steady change in one direction, and pulsatory irregular changes. Local climatic changes have often been supposed to be due to human activities, such as the cutting of forests, the opening up of a country to agriculture, the introduction of irrigation. Geographers, geologists, and meteorologists, however, are now practically unanimous in believing that such actions produce only slight climatic effects. In spite of innumerable statements to the contrary, it seems almost certain that northern China, for example, does not owe its unfavorable climate to the cutting down of trees, but owes the absence of trees to the dry climate. The wholesale destruction of forests may work havoc if the ground is swept bare by fires and the soil is washed away, but this does not appreciably change the rainfall. Unwise agriculture or excessive pasturage of sheep and goats may allow the soil to be washed away from the hills, but this again does not appreciably change the rainfall, altho it greatly alters the habits of the rivers and springs.

The hypothesis of a progressive and world-wide climatic change in one direction has also been practically abandoned by geographers.[1] The almost universal opinion of geologists, as we have seen, is opposed to the idea of any long *steady* change in one direction. Of course, the net result of the 20,000 to 30,000 years since the Glacial Period has been a change in one direction, but this change appears by no means to have taken place regularly. In the same way, during the historic period there appear to have been similar irregularities, altho the general tendency has been toward less favorable rainfall in southern Italy and the other lands around the Mediterranean. Elsewhere, for example on the southern border of the subtropical desert belt, the change may have been in the opposite direction; but that does not now concern us.

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[1] This statement is based partly on the fact that during the past ten years even such defenders of the hypothesis of progressive climatic changes as Kropotkin have modified their views in the direction of irregular or pulsatory changes. (See Geographical Journal, vol. 43, p. 451, London, 1914.) It is also based on the answers to a series of questions recently sent out by the writer to the members of the Association of American Geographers, to a list of geologists selected by Professor Joseph Barrell, to the Climatic Committee of the Ecological Society of America, and to a few meteorologists not included among the geographers. Among those from whom replies have thus far been received only three believe unequivocally in climatic uniformity during historic times. Only one thinks that changes have occurred mainly through human actions, altho a considerable number believe that these have been of subsidiary importance. Three accept the idea of a change which progresses steadily in one direction. The remainder, forty-nine in number, believe that during the past two or three thousand years climatic changes have taken place on a scale greater than during the past century. Practically all of the forty-nine hold that while there have been irregular or pulsatory changes, the general tendency has been toward greater aridity in the Mediterranean countries and other similar regions.

III

If pulsatory climatic changes have taken place, they may have been of such widespread historical importance that it is worth while to consider the evidence in regard to them. When the climatic facts of historic times are carefully sifted, certain epochs present evidence indicating a change in one direction, while other epochs indicate the contrary. For example, the somewhat vague accounts of the Caspian Sea before the time of Christ seem to be much more intelligible if the lake stood about 150 feet higher than now, so that it almost coalesced with the Sea of Aral. Strabo, writing about 20 A.D., gives data as to the distance from the mouth of the Phasis River in the Black Sea to that of the Cyrus in the Caspian, as to the size of the sandy plain on the west coast of the Caspian, and as to other features. From his figures, Khanikof estimates that at that time the sea stood about eighty-five feet higher than now.[1]

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[1] Humboldt's Asie Centrale is perhaps the greatest source of information on this subject. For a summary of his results see The Pulse of Asia, by the present writer, pp. 327 ff., Boston, 1907.

Six or seven centuries after Christ the lake had fallen to a level fifteen feet or more below that of today, as is proved by the presence of old walls submerged beneath the water on both the east and west coasts. By the tenth century, however, the water had apparently risen at least twenty-nine feet above the present level, and later it rose still higher. The Arab geographer Istakhri, for instance, says that in his day, about 920 A.D., the water rose to the sixth tower of the wall at Derbent; and as that tower can still be identified, we have an exact determination of the lake level.[1] A ruined caravanserai at Baku stands in water fifteen feet deep, and appears to indicate that about the twelfth or thirteenth century the lake again stood at a low level. Still later, in the early fourteenth century, Sheikh Sefi-Eddin tells us that the lake rose to a certain holy grave which now lies thirty-seven feet above the present datum level. This last change of level was possibly due in part to variations in the course of the Oxus River. The drowning of the "Dragon Town" in Chinese Turkestan, however, by the rising of the waters of Lop-Nor, indicates excessive rain at this very time in Central Asia.[2] The occurrence, between 1290 and 1450 A.D., of the five coldest winters on record, if we may judge by the freezing of the Baltic Sea, proves that this was also a time of peculiar climatic severity in northwestern Europe.[3] Moreover, the Dead Sea and certain lakes, such as Gyöljuk in Turkish Armenia and Seistan in Persia, are known to have fluctuated in the same way as the Caspian Sea, and at approximately the same time, so that the climate must have varied from century to century.

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[1] See E. Bruckner, Klimaschwankungen seit 1700, Vienna, 1890.

[2] See The Pulse of Asia, pp. 287, 344.

[3] A. Norlend, Einige Bermerkungen über das Klima der historischen Zeit. Lunds Univ. Arsskrift, N. F. Abd. 1, Bd. 10; No. 7, 1914.

In America similar climatic fluctuations appear to have occurred during the same period. For example, geologists and engineers calculate that the amount of salt in the water of Searles Lake in southeastern California gives almost certain evidence that the lake must have overflowed and been fresh only two thousand or three thousand years ago. This it could only do by standing about 180 feet above the present level and expanding to two and a half times the present size. Old beaches and other deposits prove that during the two or three thousand years since the lake overflowed the level has in general fallen, but has fluctuated, sometimes falling rapidly, and again rising. The dates of these fluctuations can be determined from the growth of the giant sequoia trees fifty miles away on the other side of the Sierras. In a climate such as that of southern California having a long dry summer, the thickness of the woody rings furnishes an approximate record of the rainfall. This record, as read from 450 sequoia stumps, agrees in general with the pulsations of climate inferred in Asia. Thus in the parts of both the Old and the New World having the Mediterranean type of climate there is evidence of the same kind of irregular changes.

A single concrete example will illustrate some of the ways in which such changes may have influenced the drier regions of the Roman Empire. About the time of Christ the oasis of Palmyra in the Syrian Desert was famous for the sweetness, purity, and abundance of its waters. Today no one in his right mind would praise it for any of these qualities. The brackish water smells strongly of sulphur, and the natives are always disturbed by its scarcity. The gardens, tho pleasant in themselves, seem sadly forlorn and insignificant in their setting of vast ruins. In its prime Palmyra covered at least as much ground as modern Damascus, and probably had 150,000 inhabitants. Today it has only 1500 at the most. The city reached its greatest prosperity in the third century of our era, when the water supply was apparently diminishing rapidly. This is what might be expected according to the climatic hypothesis. Written records and ruins show that important roads once crossed the Syrian Desert from Petra in the south and from the western Bosra in the latitude of the Sea of Galilee. These roads are today impractical for caravans because of the absence of water and grass. They appear to have been finally abandoned in the second century because of increasing aridity. This naturally threw all the trade between Egypt, Syria, and Damascus on the one hand, and Mesopotamia and Persia on the other, to the route through Palmyra, and thus greatly stimulated that city. By the seventh century, however, when the Mediterranean lands and western Asia apparently became more arid than at any other known period, Palmyra was practically abandoned. In the tenth century, when the water supply for a while became more abundant, it enjoyed a partial recovery, only to decay once more during the next dry epoch. Today the water supply varies directly in harmony with the rainfall of the past few years, and the size of the village changes correspondingly.

Before applying our climatic hypothesis to the fall of Rome, let us gain a clearer idea of the precise changes that have probably taken place in Italy. It does not seem that at any time within the last three thousand years the country had a climate like that of either central Europe or northern Africa. At all times the general character of the seasons has presumably been the same as now. There have been abundant rains in winter and a diminished rainfall in summer. The temperature, as already pointed out, has apparently not been essentially different from what it is today. The change appears to have been primarily in storminess. As nearly as can yet be determined, tho the winters two thousand to three thousand years ago were not essentially different from those of today, the storms may have been more numerous and more severe. On an average the winds were probably stronger than at present. Therefore, the warm wave which precedes a winter storm was warmer than now, and the cold wave which follows was correspondingly colder. Such conditions would have little effect except upon the sturdiness of the people; but this, as we shall see, may be of far-reaching import.

In the autumn, and especially the spring, the difference between the past and present was apparently greater than in the winter. In the autumn the stormy period probably began somewhat earlier than at present, while in the spring it lasted later. Judging by present conditions in years which go to one extreme or the other, the greatest difference was in the spring. At that time not only were the storms apparently more severe than they are today, but they continued so much later in the season that the total spring rainfall, which is the most essential for agriculture, increased in a greater ratio than did the rainfall at other seasons. Finally, the summers two or three thousand years ago apparently had about the same average temperature as today. Then as now they were decidedly less stormy than the spring. Nevertheless, in summer, as well as at other seasons, the storms of that time seem to have exceeded those of the present both in number and in severity. Hence while the summers were warm, sunny, and comparatively dry, they seem to have had more rainfall than now and to have been more subject to the pleasant changes which mitigate the effects of long steady heat.

There has been so much misconception about this matter that it is necessary to emphasize it. Even if there have been important changes of climate, the succession of seasons in the past was in general like that of today. The chief difference lay (1) in somewhat more abundant rainfall at all seasons and a decidedly greater abundance in the spring, and (2) in greater variability, which would be of chief importance in warm weather. This variability apparently caused the past climate to have more than now of the stimulating quality which today differentiates such a climate as that of Germany, England, or the northeastern United States from that of such countries as Greece or Spain. In general the climate of Italy, from Rome southward — the part of the country with which we are mainly concerned in classical times — resembled that which now prevails in the northern part of the country, but was probably even better at certain periods.

In order to assign to climatic changes their due importance in history it is necessary to understand not only the nature of the changes, but their periodicity. This can best be done by means of diagrams such as I have published in my book *Civilization and Climate*. Figure 33 in that volume (p. 228) shows the variations in the rainfall of western and central Asia as inferred from ruins, lakes, famines, old roads, and other evidence available previous to 1910. The solid line shows changes of climate in California on the basis of the growth of the Big Trees measured in 1911 and 1912. Later studies indicate that the dotted line should be modified as indicated by the dashes and also in certain other respects — for example, about 400 B.C., where it should rise higher. The original curve, however, is reproduced in order to show the resemblance between the conclusions reached in two continents by wholly diverse methods. In general, the two lines of Figure 33 indicate that approximately the same changes have taken place in similar climates in the two hemispheres. It would not be justifiable, however, to assume complete similarity in all the details. Moreover, according to conclusions reached simultaneously and independently by Penck in Europe and by the writer in America, climatic changes seem to consist of a shifting of the various zones first toward the equator and then away from it. Accordingly, a change may occur in one place somewhat later than in another.

Altho the results presented in *Civilization and Climate* are by no means final it seems allowable to use them as the basis of a study of the fall of Rome. While not applying directly to Italy, the curve of the Big Trees seems to show the main trend of events in that country as well as in California.[1] Omitting the earlier and more doubtful centuries, it appears that from 450 to 250 B.C., Italy probably enjoyed a highly favorable climate. During the next fifty years there was marked deterioration. Throughout the second century, conditions were less favorable than before, altho on the whole they were improving. Even

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[1] It may seem at first sight that Italy and California are so far apart that the record of the Big Trees cannot safely be applied to the problem of this paper. Such, however, is not the case, as appears from three lines of evidence: (1) The growth of the trees is the only means thus far available for actually measuring the effect of climate year by year throughout the historic period. Therefore until further data are available it is our best yardstick. Recent studies of the relationship between present variation of atmospheric pressure or temperature in widely separated parts of the earth make it practically certain that a change in California must be accompanied by a change in the Mediterranean region. The question is whether the changes in the two regions are of the same kind. (2) A comparison of the two curves of Figure 33 in Civilization and Climate shows that in general similar variations have taken place in California and western Asia. The agreement of the two curves is particularly noticeable from 800 A.D. to the present time, that is, during the period when the data are most abundant. Moreover, since the Asiatic curve was prepared, in 1910, a good deal of new evidence has become available. It all indicates an agreement between the Asiatic and California climates. For example, the explorations of Stein in Central Asia indicate that the second century B.C. was drier than appears in the dotted line of Figure 33. The statements of Herodotus, on the other hand, seem uniformly to point to abundant moisture in the second half of the fifth century B.C., thus harmonizing with the tree curve. (3) The third and strongest reason for thinking that tree growth in California may be used as a measure of the rainfall of southern Italy is the fact that at the present time the two phenomena vary in harmony. Let us confine our attention to the months from March to July, since they are critical for agriculture in both California and the Mediterranean countries. The two longest rainfall records in California, those of San Francisco and San Diego, give an idea of the main climatic fluctuations in southern California since 1851. Figures are available for a comparison of these fluctuations with the annual growth of 112 sequoia trees in the Sierra Nevada Mountains, and with the rainfall at Rome, Naples, and Jerusalem for the fifty-five years from 1851 to 1905.

The method of comparison is to arrange the years of each record in order according to the amount of rain in California. The years are then divided into the four groups indicated below, and the averages are obtained. In computing the tree growth the averages for the three years beginning with a certain condition of rainfall have been used in one case, and the third year after a given rainfall in the other. This is because the growth of the sequoias depends more upon the rainfall of preceding years than upon that of the year in question.

Groups of Years

I. 7 years with heaviest rainfall in California, i. e., an average of over 6.5 inches.
II. 13 years with heavy rainfall in California, i. e., 3.9 to 6.4 inches.
III. 17 years with light rainfall in California, i. e., 2.7 to 3.8 inches.
IV. 13 years with least rainfall in California, i. e., less than 2.7 inches.

The average rainfall (columns A to D) and the average growth (columns E and F) for the four groups are as follows:

		Average Rainfall			*Average Growth of Trees*	
	A	B	C	D	E	F
	San Francisco and San Diego	Rome	Naples	Jerusalem	3 years	Third year
I.	8.3 in.	10.7 in.	11.5 in.	7.0 in.	3.02 mm.	3.07 mm.
II.	4.5 "	10.6 "	11.0 "	6.3 "	3.00 "	3.04 "
III.	3.4 "	9.8 "	9.2 "	5.6 "	2.98 "	2.99 "
IV.	1.9 "	9.6 "	8.6 "	5.2 "	2.92 "	2.84 "

Without exception all the columns from B to F vary in harmony with the California rainfall, A. At Rome the agreement with California is less marked than at Naples, while at Naples, when reckoned in percentages, it is less noticeable than at Jerusalem. At Palermo, however, the agreement is probably at least as marked as at Jerusalem, as appears from the following table for the twenty-six years for which rainfall records are available at the time of writing.

(1)	10 years with average rainfall of 5.8 in California	Average 8.3 at Palermo.
(2)	8 " " " " " 3.6 " "	" 7.6 " "
(3)	8 " " " " " 2.4 " "	" 6.2 " "

The Indian Meteorological Service has shown that in winter and spring storms of a certain type pass from the western Mediterranean across Syria, Mesopotamia and Persia to northern India. This type of storm appears to increase when the rainfall is abundant in California and the sequoia trees grow rapidly. This does not mean that a single year of heavy rainfall in California is sure to be accompanied by abundant rain in Italy and the other Mediterranean lands. It does mean, however, that at present when any considerable group of years is considered, the growth of the sequoias indicates the general conditions of rainfall in those countries. Presumably the same was true in the past. So far as can be judged from the growth of the sequoias and from the other data now before us, it appears as if the rainfall of southern Italy during the months from March to July at the time of Christ may have been from 50 to 100 per cent greater than at present.

at the worst, however, they were distinctly better than today. From 100 B.C. to 50 A.D. more favorable conditions ensued, altho not equal to those during the pristine days of the Roman Republic. Next came a sudden deterioration so that the second century of our era was unfavorable, altho possibly not so much so as the second century before Christ. After a slight recovery at the end of the second century and the beginning of the third, there began a long and steady decline in climate until the final fall of the Western Empire. The next century and a half saw a slight improvement until the beginning of the seventh century. Then followed the two worst centuries of the historic period, altho possibly the thirteenth century B.C. may have been almost as bad.

Turning now from the physical side of our problem, let us consider the probable historic results of the adverse climatic changes that appear to have taken place between 250 B.C. and 650 A.D. It will be understood that the reverse of what is here described is supposed to characterize favorable changes.

IV

We may divide the results of climatic changes into three groups: economical, political, and biological. For a statement of the economic conditions I cannot do better than refer to Professor Simkhovitch's article already quoted. I do not agree with him in thinking that exhaustion of the soil was the primary cause of the conditions which he describes, for in countries like Syria cultivation by the methods which he deplores has continued for thousands of years, and people are still fairly prosperous wherever water is abundant. Nevertheless, his description of the decline of agriculture is most weighty. In showing "how the great agricultural scholars of the time analyzed the situation," he quotes the following extracts from Columella, who wrote about 60 A.D.: "I frequently hear the most illustrious men of our country complaining that the sterility of our soil and intemperate weather have now for many ages past been diminishing the productivity of the land. Others give a rational background to their complaints, claiming that the land became tired and exhausted from its productivity in the former ages, and hence the soil is no longer able to furnish sustenance to mortals with its former liberality."[1]

This quotation sets forth two theories as to the cause of the agricultural decline of Rome. In Columella's day the most illustrious men of Rome apparently complained that a change of climate had for ages been producing sterility and thus diminishing the crops. Others, whom Columella thinks more rational, believed that the soil of Rome had become exhausted. Nevertheless, as Columella himself points out, the Romans in the former ages were familiar with the most effective methods of cultivation. As Simkhovitch puts it, "the intensive farming of the Romans on seven-jugera farms, was like the farming of the Chinese and Japanese, very intensive, their small grain fields being planted in rows, hoed, and weeded and carefully manured with excrements and ashes and stable dung. The experience of China and Japan has shown that on very small land plots such intensive agriculture can maintain itself indefinitely without any recourse to scientific repletion of the soil by mineral fertilizers."

In view of this we must apparently assume either a most profound and astonishing change in Roman character, or else a change of climate. If the Romans knew how to farm like the Chinese and Japanese and thus indefinitely to ward off the effects of the exhaustion of the soil, but failed to do it when they found themselves falling into dire distress, they surely had suffered an "inner decay" that is scarcely conceivable. On the other hand, if they had not rain enough in the late spring, no amount of care and cultivation would make it possible to carry on intensive agriculture.

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[1] This passage had already been quoted by Liebig, Die Chemie in ihrer Anwendung auf Agrikultur. . . . 9th ed., p. 53.

One of the most notable features of the curve of tree growth in California was the decline from about 250–200 B.C. If a similar change occurred in the rainfall of Italy it would tend to kill the forests or at least to reduce their density and render them an easy prey to fires and to the depredations of sheep and goats. Hence the soil would be left unprotected, and the rains of winter would wash it down to the lowlands and thus spoil many a good farm in the way that Simkhovitch well describes. In their place great swamps would be formed. Few people realize that some of the greatest swamps are located in the driest countries. In Transcaspia I have waited two weeks to cross the flooded tract at the lower end of the Tejen river; in Persia my camels were nearly drowned in crossing a swamp; and in Chinese Turkestan I was nearly engulfed in a grave of mud when the camel that I rode and two others broke through the apparently solid earth into a stinking morass.

In the later days of Rome, *pari passu* with the deterioration of the climate, agriculture progressively declined. Thus by 395 A.D. "the abandoned fields of Campania alone amounted to something over 528,000 jugera." Doubtless much of the land thus abandoned was capable of being restored, for even then the climate was apparently better than at present. That it was not restored seems merely to mean that when people are waging a losing fight against nature they become discouraged. The change is what counts. A carpenter with an income of $1200 a year feels prosperous, whereas a banker who has had $50,000 a year would feel himself in dire proverty if his income were reduced to $5000. The banker can in time accommodate himself to a diminished income; but suppose that a few years later his income falls to $4000, then to $3000, and finally to only $1500. He may still have more than the carpenter, but he would have to take his children out of college, sell his automobile and house, give up keeping servants, and so utterly change his mode of life that he would feel his condition to be most pitiable.

So it is with countries. In the fourth century B.C., Italy appears to have been favored with so fine a climate that less than five acres was enough to support an average family. Cultivation was highly intensive so that the most advanced methods of agriculture were developed. Failures of the crops were rare, and general prosperity prevailed. The farmers lived in comfort on their little farms and asked nothing of anyone, and the towns reflected their condition. Then when the spring and summer rains diminished — to speak by hypothesis — a small tract of land was not enough to furnish a living for the farmer and his family. Crops that had previously been profitable ceased to be worth while, the farmers ran into debt, and their lands gradually fell into the hands of large landowners. Since crops were no longer profitable the land was used for grazing purposes, as classical writers often point out. This was bad in two respects. In the first place, sheep and goats eat not only grass, but seedling trees, and thus prevent the growth of new forests. Where they pasture in abundance the soil is badly trampled, and is no longer held in place by roots. Hence it is washed away by the winter rain, leaving the hillsides barren and ruining the fields in the lowlands. In the second place, sheep-raising and cattle-raising demand large areas. Hence they increase the tendency toward the concentration of land in the hands of a few individuals. During the Augustan Age the farmers apparently recovered somewhat, and presumably were better off than in the second century B.C. Then came renewed climatic stress at the end of the first century A.D., and later the long deadening decline that culminated in the seventh century. In those days the Roman farmer was in circumstances as discouraging as those of the banker with a mechanic's income.

Such economic changes must inevitably produce political results. One of the first and most obvious is a disturbance of the system of taxation. Theoretically, taxes ought to be proportioned to the income of the people who pay them. Practically the adjustment is most imperfect, and has a disagreeable way of remaining fixed when other conditions change. When crops are bad the expenses of the government do not diminish. A tax which was easily paid from a full grain bin becomes oppressive when the grain bin is half empty. It is not surprising that the people were discontented and agrarian reforms were needed in the days of the Gracchi. At that time Rome apparently suffered from climatic conditions more unfavorable than at any other period previous to about 300 A.D. Under such circumstances the poverty and discouragement of the many almost inevitably favor the concentration of power in the hands of a few. Hence democracy suffers, and a plutocratic form of government is superimposed upon the old framework. It would be useless to illustrate the matter here, for I should merely be repeating the arguments of Professor Simkhovitch—the only difference between his view and mine being in the interpretation of the cause of the agricultural decline. Not only Rome itself, but the provinces were suffering, and it is not strange that their discontent was finally an important element in the break-up of the Rome Empire.

The theory that agriculture declined because of exhaustion of the soil seems to have little bearing on barbarian invasions. In this respect it is diametrically opposed to the theory of a decline due to climatic changes. Nomads such as those of central Asia are the first to feel the effect of increased aridity. The springs that they have been wont to frequent on the edge of the desert dry up, grass for pasturage is scanty, and therefore they begin to seek new pastures. At first they may meet with no special difficulty, provided the country is not too densely populated. Soon, however, they come into conflict with neighbors who also press into the well-watered regions where there is abundant grass. When tribe meets tribe and there is not enough grass for all, conflict is bound to ensue. Then the tribe which is obliged to content itself with the less favorable locations is practically certain to take to plundering. It may plunder its nomad neighbors, or it may make raids on the settled villages in the oases or in the better-watered tracts on the desert border.

Any one who has lived in the deserts of Asia knows how this happens. In Palestine and the Syrian Desert, for example, the year 1909 was characterized by an unusually dry spring. What happened ? The nomads pushed their way in among the settled population of the cultivated land. Dr. Patterson, a missionary physician at Hebron, says that in his hospital he operated upon gun-shot cases that year to an extent unprecedented in his sixteen years in the country. Within two months I myself had four experiences with raiders. First a party of Arabs who had already robbed some natives approached my own camp by night, but made no attack because we were on the watch; next I was sleeping in a native camp when some men of another tribe drove off all the camels; a third day we saw a band of raiders on the hills above us, and a man who had been with our party but had fallen behind only escaped by flight. Finally, a member of my escort, who had gone ahead to investigate the road, exchanged shots with a party of raiders and hid for hours before he dared rejoin us. In a good year, on the other hand, one can travel through the same country in perfect security.

If such things can happen because of the drought of a single year, what must have been the effect when aridity became more and more pronounced for centuries? Thousands of people must have been driven from their homes. Such movements begin in the driest regions, such as the great deserts of Transcaspia or Arabia. Where the nomads were met by a solid bulwark like that of the Roman Empire in Syria and North Africa, they could not achieve much; but in eastern Europe, where there was nothing to hold them back, one can scarcely doubt that they must have pressed forward. Thus one tribe would upset another, and a whole continent may have been put in commotion. This, I believe, explains to a large degree the barbarian invasions of Europe during the early centuries of the Christian era. Men do not take their wives and children and move in great masses except under some strong compulsion. I do not need to go into details on the barbarian invasions of Rome. It is enough to point out that they were numerous as long as the climate of Asia grew worse. They spread into each of the southern peninsulas of Europe. They spilled over into Africa. Finally, in the seventh century there came the culminating migration from the desert. The power of the Roman Empire had vanished, and the Arabs surged out under Mohammed. The religious impulse doubtless was of the greatest importance as a unifying factor, but hunger may have been the chief impelling force. So too, in later days, Genghis Khan may have been the unifying factor, but hunger due to a second great period of aridity was perhaps the underlying force that impelled his hordes to surge out of Central Asia.

The biological effect of changes of climate are as yet not well understood. In the end, however, they may possibly prove to be even more important than the political and economic effects. It has long been known that many of the leaders both in ancient Rome and Greece belonged to the fair Nordic race. Why else do so many of the ancient painted statutes of the gods and goddesses of Greece have red or yellow hair and blue eyes? Not all the leaders, to be sure, were tall, fair Nordics; for Socrates, the greatest mind of all, was short and dark — a typical member of the Mediterranean race. Yet the fair people from the north were sufficiently aggressive and dominant to cause the favorite divinities, Zeus, Apollo, Pallas, Diana, and others to be represented as of that race. The climate of both Greece and Italy, however, is thought by many authorities to be too sunny for the blond Nordics. It often induces diseases of the skin and nerves, and in the long run apparently lessens the rate of reproduction. Thus in a climate like that of Italy, especially southern Italy, the agressive Nordic part of the population tends to diminish. This tendency would be less, however, under the conditions which we suppose to have prevailed three or four hundred years before Christ, and on the other hand, would increase with the changes of climate here described. When combined with the Roman practice of beinging in slaves from conquered countries, it may have helped to bring about a gradual change in racial type. The race which apparently provided the majority of Rome's early leaders appears to have declined in numbers, and the decline was presumably hastened by unfavorable climatic changes.

Another important factor in the biological decline of the people of Rome was perhaps malaria. Ross, Jones,[1] and others have shown that altho malaria was well known in early Rome, it did not become widespread until the second century B.C. About that time it increased greatly and finally became endemic. Any one who has been in a country where this disease is common knows what a scourge it is. At the end of a long dry summer thousands of the population succumb. They seem inert and stupid, unable to think and unable to work. Not merely are they temporarily incapacitated, but they suffer year after year, and are permanently weakened. Ross found that nearly half of the Greeks today bear marks of the disease. Its effects are mental as well as physical. The power of self-control is weakened, and so too is the power of steady thought and of assiduous application to duty. Today with quinine as a universal remedy, and with our knowledge of how to exterminate mosquitoes, malaria is losing some of its terrors; yet it remains a scourge of terrible proportions not only in Greece, but in parts of Italy and in many Oriental countries. In the old days it must have been far worse.

It may perhaps seem a far cry from changes of climate to malaria, but the two are intimately associated. Malarial mosquitoes are found from central Europe to the equator. In Italy the degree to which they flourish depends largely on the prevalence of stagnant water. Where rains are abundant at all seasons, stagnant water is rare. Swamps may of course exist, but even there the water is apt to be changed by the rains, and the larvae of the mosquito are washed away and drowned. In the streams they cannot live because of the moving water. For this reason an abundant rainfall prevents the spread of malaria except where the forests remain constantly damp. Such conditions prevail in many equatorial regions, and are one reason why malaria is there such a terrible scourge.

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[1] Jones, W. H. S., Malaria: A Neglected Factor in the History of Greece and Rome, 1907.

During the period of favorable climate which apparently prevailed in Italy three or four hundred years before Christ, the mountains were probably well wooded, and springs abundant. The streams must have been for the most part perennial, and were presumably well adjusted to their valleys so that they flowed in clearly defined channels. Increasing aridity, as we have already seen, would cause the mountains to become more barren. Consequently the streams would become heavily loaded with mud and gravel. This would be an important element not only in ruining the farms, but in increasing malaria. As physiographers well know, when streams that are heavily loaded with silt emerge from the mountains and enter the plains, they deposit part of their load. Thus they fill their channels, divert themselves into new courses, and gradually spread out into many branches which wander here and there over wide areas, and often produce swamps. When such streams dwindle during the dry summer, most of the channels are converted into mere strings of stagnant pools, ideal places for mosquitoes. Moreover, the drier the summers, the greater the need of irrigation, and this also causes stagnant pools. Thus the supposed climatic changes in Italy were mainly of a kind to induce a great increase in the area where the mosquito was able to thrive. Hence the ravages of malaria were presumably increased, and played a part in destroying the self-control and energy of the Romans.

V

I have left till last what I believe to be the most important effect of climatic changes. Students of the science of ecology, that is, of the adaptation of organisms to their environment, are reaching some surprising conclusions in regard to man. It has been our boast that the human race, alone among animals, is able to dwell in all parts of the world and to adapt itself to all conditions. In proof we point to the fact that white men can live and work in Arctic regions or in tropical Africa. We also point to the fact that the human race has differentiated itself into black people, yellow people, white people, and red people, and that each of these appears to be adapted to a particular kind of climatic environment. It appears now, however, that there are two kinds of adaptation: one to sunlight and the other to temperature and humidity. The adaptation to light can apparently be made with comparative ease. It is a matter of everyday observation that in winter or when people stay in the house at any season the skin becomes pale, whereas exposure to the sun soon changes the complexion of people of fair races. In the same way a change of habitat is apparently followed by a gradual elimination of the people whose complexions are not adapted to the new environment. The adjustment to temperature and humidity appears to be much more conservative than the adjustment to light. A study of the relation of the death-rate to temperature among many races and in many parts of the world illustrates the matter. Taking the year as a whole the number of deaths in all parts of the world varies in close harmony with the temperature. At low temperatures large numbers of people die, which means of course that they are physically weak. Under ordinary circumstances the number of deaths declines up to an average temperature of between 60° and 65° for day and night together. At average temperatures above 65° the death-rate begins to increase, and above 70°, which means when the thermometer rises to approximately 80° or more at noon, it increases with great rapidity, especially if the air is humid. Strange as it may seem, the negro or Cuban in the southern part of the United States shows scarcely more adaptation to a hot climate than does the white man, while the Finn and Swede of the far north are weakened by low temperature almost as much as is the negro. The Japanese death-rate shows that that race also thrives under practically the same conditions as do the whites and negroes.

Other tests also indicate that a mean temperature of from 60° to 70° according to the degree of humidity is physically best for various races; for mental activity one somewhat lower is best. Confining ourselves now to the physical, we find, for example, that factory operatives of European races in the United States work most rapidly, which means that they are strongest, when the temperature averages about 60°. For Cubans in Florida the figure is slightly higher, about 65°, but the difference is not enough to be significant. Tests of the strength of negroes in Virginia give 61° as the best average temperature, while their death-rate is least at an average of about 67°. Experiments on the amount of carbon dioxide in the breath at Manchester, England, indicate 62° as the best temperature. As the temperature of the blood is the same in all races, so it appears that almost the same outside temperature is probably best for all men, whether black, white, red, or yellow. The same appears to be true of atmospheric humidity, which has a marked effect upon man's capacity for work. A large body of evidence also indicates that changes of temperature from one day to the next as well as from season to season are highly important. In fact no matter how good a climate may be in other respects, it is open to question whether people's energy, strength of purpose, and power of achievement can remain at a high level for generation after generation except in a climate where there is the stimulus of constant change.

On the basis of the actual achievements of thousands of people under different conditions of climate, it is possible to make a map showing the amount of energy which different races would have in different parts of the world on the basis of climate alone.[1] This map is strikingly like a map of civilization. The resemblance of the two indicates that today the active and progressive races, those that dominate the world, are all located in climates which possess a highly stimulating quality. If we are right in thinking that the response to climate is almost the same among all races, the matter is highly significant in our interpretation of the fall of Rome. As we have already seen, the climatic changes which have apparently taken place in Italy appear to have been characterized by a decline in the variability of the weather from day to day, especially in the spring and summer. This means that three or four centuries B.C., Rome was blessed with a climate whose mean temperature was as good as that of today, and which at the same time was better than that of the present, not only for agriculture, but in its stimulating effect on human activity. It apparently possessed the sparkle and tang which our own climate in the northern United States possesses to so marked a degree. If this is so, the change which took place between 300 and 200 B.C. and still more the gradual change between the time of Christ and the seventh century probably had an appreciable effect upon the energy and ability of the Roman people. Even if there had been no change in the racial composition of the inhabitants, no malaria, no agricultural distress, and no invasions of barbarians, there still would apparently have been a decline in ability. Such a decline would work particular harm at times when other conditions were becoming adverse. For instance, when irrigation was needed to overcome the difficulties of aridity, it would be particularly necessary that people should have abundant energy and initiative. These qualities would be equally needed to overcome malaria, and to prevent the streams from flooding the fields and creating swamps. Energy too would be especially valuable when the barbarians were threatening invasion, or when political questions were becoming difficult because of agricultural adversity, poverty, burdensome taxes, and consequent general discontent.

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[1] Such a map is published in my Civilization and Climate, p. 200. The volume contains a full discussion of the relation of climate to civilization. Since it was published new facts have been discovered which show that the response of different races to climate is more uniform than was supposed when the book was written.

The view presented in this paper will seem to many readers to rest on foundations too slender. Even to my own mind the investigation of the relation of climate to human efficiency has brought results so surprising that I find it difficult to remodel my preconceived conceptions. Whether the hypothesis here advanced is right or wrong, it at least has a sufficient foundation to warrant further study. It does not explain why men of genius arise, why political and social institutions evolve, or why a large part of the events of history occur. It does, however, offer a possible explanation of some of the most puzzling phases of the decline and fall of nations. The test of its accuracy lies along three lines. (1) Geographers must work out far more accurately than has yet been done the exact sequence of changes of climate, their degree of severity, and their nature. (2) Ecologists and physiologists must determine how much of human energy depends on inherited capacity and training, and how much upon physical environment, and especially upon conditions of temperature, humidity, and other climatic elements such as the amount of ozone or electricity in the air. (3) There is a vast field for economists and historians. The geographer may point out the results which he expects at certain epochs because of the climatic conditions. It rests with the historian and economist to determine whether the expected results have actually occurred. It also rests with them to scan the pages of history for the almost innumerable facts which bear on this problem. Gradually the world is seeing how intimately physical, mental, and moral traits are related, and how each reacts upon the other. The lessons of history cannot rightly be understood until the combined work of men in many lines gives us a clear idea of each one of the complex factors leading to such great events as the fall of Rome.

ELLSWORTH HUNTINGTON.

THE SEPARATION OF RAILROAD OPERATING EXPENSES BETWEEN FREIGHT AND PASSENGER SERVICES

SUMMARY

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I

THE increasing importance attached by the Interstate Commerce Commission to cost of service as a prime factor in rate cases is seen in many recent decisions.[1] The evidence and the briefs presented both by the railroads and by the protestants now give special prominence to expense apportionments; and certain firms of public accountants have specialized as experts in railroad rate cases.

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[1] Among them the following are of special interest: Five Per Cent case, 31 I. C. C. 392; Anthracite Coal case, 35 I. C. C. 220; 1915 Western Rate Advance case, 35 I. C. C. 497; Western Passenger Fares case, 37 I. C. C. 1; Lake Erie Ports Iron Ore case, 41 I. C. C. 181; and New England Milk case, 40 I. C. C. 699.

One of the first important cases in which cost statistics played a very important part was that decided by the Wisconsin Railroad Commission on February 16, 1907. (Buell *v.* C., M. & St. P. Ry. Co., 1 Wis. R. R. C. Rep., p. 324.) The railroad company, in support of its proposed advances in passenger fares, presented elaborate statistics purporting to show that the passenger service, taken by itself and charged with its fair share of operating expenses, taxes, and charges, failed to earn a reasonable return on the investment. The computations required a separation of all of the accounts, not only between freight and passenger service, but also between Wisconsin and the other states served by the Chicago, Milwaukee and St. Paul Railway. In criticizing the methods employed by the railroad, the Wisconsin Commission laid down certain principles applying to the apportionment of income and outgo, and the decision may be regarded as a bench mark in railroad cost statistics in rate cases. In the opinion of the Commission:

> The most essential element in the fixing of a reasonable rate is the cost of service to the carrier. There are very many other facts which also should be taken into account, but none of them seems to be as vital or as necessary to a just and fair conclusion as the cost. Without some facts which indicate the approximate cost per unit of service, or per unit of transportation, it would seem to be practically impossible to say at what figures the rates should be fixed in order to yield operating expenses and a fair rate of interest on the investment.

The purpose of the present article is to discuss the various methods used by the railroads and public accountants for separating operating expenses between the freight and passenger services, and to suggest a solution for one of the most difficult of the problems. It is not the purpose of the article to touch upon the value of cost of service as an element in rate-making.[1] Regardless of the limited application of such evidence in determining the reasonableness of rates affected also by competition of carriers, competition of markets, competition of commodities, and other factors which may have the prevailing influence, the Commissions and the Courts have decided in a long list of cases that information as to the cost of service is essential, particularly in general advances in rates. In the Western Passenger Fares case (37 I. C. C. 497), for example, the decision of the Commission apparently hinged upon the figures showing the relative remunerativeness of the passenger service compared with that of the freight service.

The railroads, therefore, are taking more interest in the problems connected with the separation of expenses. Instead of magnifying the difficulties inherent in the attempt to separate joint costs, and ridiculing the bases which have been suggested, the railroads are now making an earnest effort to devise methods to produce results which will be of value not only in rate cases but will also afford the railroads themselves valuable information of a "cost accounting" nature which heretofore many of them have lacked. Unfortunately, however, little progress has been made in standardizing the accounting practice. Both as between the railroads themselves and as between the railroads and public accountants (as well as between the public accountants themselves) there is much confusion and conflict.

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[1] Nor is any consideration given here to the propriety of regarding the results obtained by allocation and apportionment of expenses as "cost" figures. See article by Allen S. Olmsted, 2d, "Do 'Cost of Transportation' Exhibits in Railroad Rate Cases show Cost?" Annals of the American Academy of Political and Social Science, Philadelphia, January, 1916, Publication no. 973. Olmsted believes that the word "cost" in such cases is a misnomer. "Such computations consist of two processes. One is an *allocation* to a particular traffic of costs attributable solely to it; the other is an *apportionment* between the particular traffic and other traffic of costs jointly caused by both kinds of traffic. . . . Allocation is the assignment of facts; apportionment is the determination of policy. The former concerns itself with what is; the latter with what should be. One process consists of untwisting the intertwined but separate and distinct strands of a particular causation; the other of splitting the homogeneous fibres of a single cost jointly caused. Allocation aims to find what each service *costs;* apportionment aims to determine what each service *ought to pay*. . . . Combining the two figures seems like adding quarts to feet. The desirable course would seem to be to resolve the total 'cost' into its constituent elements, one marked 'Matter of Fact — Allocated Cost of Service' and the other labeled 'Matter of Opinion — Mathematical Photograph of Witness's Sense of Justice.'"

II

During the first seven years of the Interstate Commerce Commission's jurisdiction over the accounts and statistics of interstate carriers (from July 1, 1887, to June 30, 1894) the Commission required the railroads to report their operating expenses separately as between the freight and passenger services. Definite rules, however, were not promulgated, and much latitude was allowed the railroad accountants. The early reports of the Commission contain tabulations which purport to show not only the average revenue per passenger mile and per ton mile, but, as well, the operating expenses applicable to each unit of service. On their face, the figures gave an indication of the relative remunerativeness of each class of service, but as the experience of seven years developed serious difficulties in practice, and as the results were widely discredited both by the railroads and public regulating authorities,[1] the Interstate Commerce Commission withdrew the requirement. The *First Revised Issue of the Classification of Operating Expenses* (effective July 1, 1894) omitted any reference to the subject.

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[1] "The test of actual practice fails to satisfy us that these rules are of any utility either to the companies, the states or the nation. Indeed, if not substantially correct they could not be expected to be useful and may prove positively vicious. We know what results have been reached by the application of these rules for division which are grossly erroneous not to say preposterous." From Report of Committee on Uniformity of Accounts, Proceedings of the Fourth (1892) Annual Convention of the National Association of Railway Commissions, p. 23.

Now, after a lapse of twenty-one years, during which the authority over railroad accounting has been made absolute, the Interstate Commerce Commission has renewed the requirement. Effective July 1, 1915, carriers having annual operating revenues of $1,000,000 or more, are instructed to report a division of operating expenses in accordance with the Commission's *Rules Governing the Separation of Operating Expenses between Freight Service and Passenger Service on Large Steam Railways*.

Briefly, the Commission, while avoiding extreme particularity in its instructions, lays down the general principles that:

(1) Such expenditures as may be definitely and accurately allocated should be reported separately.

(2) Such expenditures as may not be definitely and accurately allocated, but which are susceptible of apportionment on some basis which will approximately represent the facts, should be pro-rated.

(3) Such expenditures as those which defy any accurate or even any approximate allocation or apportionment should be reported as "undivided," the Commission to determine later, or as needed in special cases, how the undivided items should be split between the two classes of service.

The three divisions, then, are:

(*a*) Direct charges.

(*b*) Indirect charges susceptible of approximate separation.

(*c*) Overhead or other joint costs which are very difficult to separate.

In the first group are the wages of the locomotive and train crews, the cost of locomotive fuel, the maintenance of motive power and other rolling stock, the charges to freight claims and baggage claims, and other minor items of expense which may be kept entirely distinct by classes of service.

In the second group are such accounts as station service, which may be directly allocated in a large part, the remainder to be divided in proportion to "man hours" in each class of service; yard service, directly allocable in part, the remainder to be separated in proportion to "locomotive hours" in each class of service.

In the third group are most of the items under maintenance of way and structures, such as roadway maintenance, the renewals of rails, ties and ballast, and the maintenance of work equipment. It includes as well all items classified as general expenses.

Throughout the maintenance of way group, which presents the most difficult problems in apportionment, the Commission requires that under each account such expenses as may be directly traced or recorded should be charged either to the freight or to the passenger service, the remainder to be regarded as joint expenses and reported as undivided. Superintendence, for example, is to be reported as undivided. With respect to maintenance of station buildings, the rules require that carriers keep a record of maintenance costs of freight stations (to be charged to freight) and of passenger stations (to be charged to passenger) and that the remainder should be pro-rated in the same proportion as the direct charges to that account. All roadway and track expenses, with the exception of yard track maintenance (which is to be recorded separately and divided between freight and passenger in proportion to switch locomotive miles in each class of service) and maintenance of roadway buildings, are to be reported as undivided. Maintenance of water and fuel stations is to be divided on the basis of the freight and passenger proportions of fuel costs. Maintenance of shops and engine houses is to be divided in the proportion which the freight and passenger services assume in the total charges to the maintenance of equipment group of expenses. The cost of maintaining grain elevators, storage warehouses, and the like, is to be assigned directly or apportioned according to the facts in individual instances. The maintenance cost of telegraph and telephone lines, and of signals and interlockers, is to be divided on the basis of transportation train miles. Power plant maintenance is to be assigned according to facts in individual instances. Maintenance cost of paving, roadway machines, etc., and the charges to injuries to persons, insurance, stationery and printing, and other maintenance of way expenses are to be reported as undivided, unless a determination of facts in individual instances makes definite allocation possible. The cost of maintaining joint tracks and other joint facilities should, as far as practicable, be treated individually according to the use made of them by the reporting carrier, regardless of the use made of them by other carriers.

Under maintenance of equipment expenses one item only (work equipment — repairs, depreciation and retirements) is to be reported as undivided. The maintenance of work equipment is to be regarded as an undivided expense and should be treated in the same manner as roadway and track costs. With respect to the maintenance and replacement of locomotives and cars (other than work equipment) the railroads are required to keep their accounts in such form that the actual cost of repairing and replacing of freight locomotives and cars shall be charged to the freight service, and that the similar costs for passenger locomotives and cars shall be charged to the passenger service. In the case of locomotives used in both classes of service, the expense is to be pro-rated on the basis of locomotive miles in each class of service, altho permission is given to use " some arbitrary deemed by the carrier to be applicable, as, for example, by making one and a half passenger locomotive miles equivalent to one freight locomotive mile." The cost of maintaining locomotives used in mixed train service is to be apportioned on the basis of car miles in mixed trains (unless the carrier is able to make a more nearly accurate estimate), and the maintenance cost of switch locomotives is to be divided according to the freight and passenger switching locomotive miles. For the latter account the railroads are permitted to take all yards together annually. This is essentially a "locomotive hour" basis, since switching locomotive mileage is computed on the arbitrary basis of six miles per hour, according to the rules of the Commission pertaining to the compilation of locomotive, train and car mileage.

For the charges on account of depreciation and retirements of locomotives and cars the rules require an assignment " direct as far as practicable," and an apportionment of the unassigned remainder "according to the mileage made in each class of service by the individual locomotives (or cars) or by classes of locomotives (or cars)." In the case of locomotives alone "if this method is not practicable, then the division should be made according to the aggregate freight locomotive and passenger locomotive ton mileage of the locomotives affected for the year, or upon some other basis deemed by the carrier to be more nearly accurate."

Charges to superintendence (maintenance of equipment), shop machinery, power plants, floating equipment, miscellaneous equipment, injuries to persons, insurance, stationery and printing, and other maintenance of equipment expenses, are to be apportioned on the same basis as the freight and passenger proportions of repairs of locomotives and cars. The same basis is to apply to maintaining joint equipment at terminals "unless a knowledge of local conditions enables a carrier to make a more nearly accurate estimate. Each terminal should, as far as practicable, be treated individually."

The entire group of traffic expenses is to be assigned directly. This is usually practicable, in as much as the freight traffic department and the passenger traffic department are ordinarily distinct and separate below the executive offices. Common traffic expenses are to be apportioned on the basis of the directly assigned expenses in this general account.

In the group of transportation expenses no items are to be reported as undivided. The cost of dispatching trains is to be apportioned according to transportation train miles. The cost of station employees and station supplies and expenses is to be charged according to direct analysis, the common expenses to be apportioned as in the case of superintendence (to be mentioned later). Charges to weighing, inspection and demurrage bureaus, and to coal and ore wharves operation, are to be assigned directly. The yard group of expenses is to be assigned directly as far as practicable, the unassigned remainder to be apportioned in accordance with the freight and passenger yard switching locomotive miles of the year, each yard to be treated individually, if practicable, but at least excluding the mileage of those yards which have been treated as wholly freight or wholly passenger. In the cost of operating joint yards and terminals, each yard or terminal is to be treated individually, and a separation made according to local conditions.

The wages of train enginemen, motormen and train crews, the cost of fuel, water and other locomotive supplies, and the cost of train supplies, are to be assigned directly as far as practicable, common expenses to be divided on the basis of the direct assignments in each account. The charges to road engine-house expense are to be divided according to the number of engines handled for each class of service, an arbitrary to be used, if deemed proper, to give freight locomotives a greater weight than passenger locomotives. Operation of sleeping cars, express service and baggage claims are to be charged direct to passenger. The cost of settling freight claims is to be charged direct to freight. Charges to signal operation and crossing protection are to be apportioned on a transportation train mile basis. The expense of clearing wrecks is to be assigned directly, as far as practicable, according to the service in which the accident occurred and not according to the responsibility for the accident, the unassigned remainder to be divided (like superintendence) on the basis of the entire assignable items in the transportation expenses group. The charges to damage to property, damage to live stock on right of way, and injuries to persons, are to be treated the same as clearing wrecks. The remaining transportation accounts — namely, superintendence, train power purchased and produced, operating floating equipment, stationery and printing, insurance, and other transportation expenses — are to be divided according to the freight and passenger proportions of the aggregate of the assignable items in the transportation group. The cost of operating joint tracks and facilities is to be similarly treated "unless a knowledge of local conditions enables the carrier to make a more nearly accurate estimate."

Transportation expenses of water lines, miscellaneous operations, and general expenses, are to be assigned directly as far as practicable, the remainders to be reported as undivided "unless a knowledge of local conditions makes possible a more nearly accurate estimate."

Carriers are required to indicate the total amount of credit which should be given to the freight service for work (such as carrying company fuel and other company supplies) performed for the passenger service, and *vice versa.*

III

In the hearings on this subject, following the publication by the Commission of the tentative rules for separating expenses, there was an apparent acceptance of the principle that such separation is necessary, and no serious differences in opinion developed as to the methods proposed, except with reference to those applying to maintenance of way and structures expenses which are common both to freight and passenger services. The representatives of state commissions advocated the use of the "gross ton mile" basis, while the representatives of some of the railroads favored "engine ton miles." By gross ton miles is meant the weight of the train behind the locomotive tender — cars and contents — times the miles made by the train. By engine ton miles is meant the tons of locomotive — ready for service (excluding the tender) — times the miles made by the locomotive. In both cases the ton is taken as 2,000 pounds.

In the opinion of the Commission, as expressed in the foreword to the rules as finally promulgated, the facts and arguments presented did not at that time warrant the final approval of the Commission of any one of the three bases suggested, namely, gross ton miles, engine ton miles, or direct charges, as the divisor for joint maintenance of way expenses. Carriers are required, until further notice, to compute engine ton mile data, and the relative merits of the three bases, or modifications thereof, are to be further considered by the Commission with the aid of the statistics thus made available.

The absence of definite instructions to govern in the controversial features connected with the separation of the maintenance of way expenses is unfortunate. The Commission, evidently, is unwilling as yet to commit itself to hard and fast rules. In recent cases (particularly the Western Passenger Fares case to be referred to later) it has taken pains to make clear that where apportionments of expenses have been accepted, the Commission has not thereby given approval to any particular formula for maintenance of way expenses. Apparently, further time is desired to consider conflicting evidence as to the fairness and propriety of the alternative bases, and to observe the effect of the 1915 rules pertaining to the subject. In the meantime, the railroads hesitate to commit themselves to any one formula, fearing that it may not have a place in the next edition of the Commission's rules. The separation of the maintenance expenses, and necessarily of the total operating expenses, is but partially accomplished, and the tendency on the part of the railroads will probably be to report a large part of expenses as "undivided."

As has already been stated, it is in connection with the separation of maintenance of way expenses that there exists the greatest diversity and divergence in opinion and practice. Such items as roadway maintenance, tie renewals, and repairs to bridges, trestles, and culverts, form the most baffling of apportionment problems.

The cost of maintaining the roadbed and track structures is influenced by many factors. These factors may be classified into at least three groups:

(1) Natural deterioration or disintegration; caused by the elements.

(2) Wear and tear; caused by locomotive and car use.

(3) Standard of maintenance; determined by the policy of the management.

The effect of the elements is seen in the decay of ties, the wasting or fouling of the ballast by rain, high water, and winds, the clogging of the ditches, the erosion of slopes and embankments, the corrosion of rails, rail fastenings, tie plates, bridge members, and other steel structures, and the deterioration of buildings and other wooden structures. This deterioration or waste is entirely independent of and bears practically no relation to the use to which the track and structures are put.[1]

As to what proportion of the cost of repairs and renewals is due to the action of the elements and what proportion is due to the wear and tear of train traffic, there are no exact data, and the opinions of engineers and accountants differ widely. In the Buell case[2] the Chicago, Milwaukee, and St. Paul Railway set the percentage due to the elements at 25 per cent. To this the Wisconsin Commission properly took exception, as the weight of opinion is decidedly against such a low percentage. Woodlock, in his monograph on *Ton Mile Cost* estimates that 90 per cent of the cost of maintaining the roadbed is due to natural deterioration. Other authorities quoted by the Wisconsin Commission support percentages similarly high. For tie renewals, Woodlock charges 67 per cent to decay. For bridge maintenance he sets the percentage due to the elements at 90 per cent. The Wisconsin Commission decided that in the case of ties between two-thirds and three-quarters would be fair, and as to bridge maintenance costs (consisting largely of charges for painting) the percentage given by Woodlock was approved.

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[1] The standard of maintenance will naturally be higher on the road with heavy traffic, and the point at which deterioration will cause a removal and renewal of parts will be reached sooner than on the road with light traffic.

[2] 1 Wis. R. R. Com. 324.

As a practical matter little is to be gained by attempting to separate maintenance costs between those due to the elements and those due to traffic, unless, as was true in the Buell case, different bases were used in separating the two component parts of maintenance expenses between the freight and passenger services. In some computations the cost due to wear and tear was divided according to use, as expressed by locomotive or train miles or combinations of the two, and the cost due to elements was divided on the basis of road or track miles, or on gross revenues. In the Buell case the Wisconsin Commission adopted such a method because it was considered unfair to the state of Wisconsin, in which the traffic density of the railroad was greater than in other states, to charge that state with its train mile proportion of all maintenance of way expenses when only a part, and a relatively small part, was due to the wear and tear of traffic. The Commission, therefore, decided that the wear and tear proportion only should be apportioned on train miles and that the remainder should be apportioned on road miles. This method, of course, had the effect of reducing the charge to Wisconsin.

The wear and tear of the roadbed, track structure, and bridges, trestlés and culverts are caused by the action of locomotive and car wheels. The degree of wear and tear, and of stress or shock, varies in some degree with the wheel load, the diameter of the wheel, and the speed. It is influenced also by the design of the locomotive and cars in such particulars as length of rigid frame, counterbalances in driving wheels, quality of springs and riding characteristics of trucks. The wear and tear and shock are felt first and in greatest degree by the rail and rail fastenings; next by the bridges and trestles; and least by the ballast and roadbed.

The policy of a railroad company with respect to the standard of roadway maintenance is influenced by the financial ability of the company and by the character of the traffic. A prosperous road with a dense passenger traffic usually adopts a higher standard of maintenance, and expends more money on that account, than the poorer road with little passenger service. So far as safety in operation is concerned, there may be little difference between the two roads. Looking at the subject from the viewpoint of cost accounting, however, we are perplexed in our efforts to determine the proper division of the extra cost on the first road. How are we to determine just what the excess amounts to? Is it proper to charge all of the excess to the passenger service when the freight service is benefited as well? Modern signaling, as an example, is usually regarded as an essential to safe passenger train operation, yet the cost of these signals may be and usually is fully justified by the assistance which the signals afford to freight trains and the consequent increase in the capacity of the road to move more trains. It may be fairly alleged, however, that higher standards of maintenance, such as the use of crushed stone ballast, are due principally to the demands of the passenger service.

In testifying before the Interstate Commerce Commission in the Western Passenger Fares case in 1915, Mr. George R. Martin, then Comptroller and now Vice-

President of the Great Northern Railway, stated (pages 2315–16, stenographer's record):

> Then if you are going to put on a fast, heavy passenger service, you would have to raise the standard of maintenance to another level, and the difference between this first level and the second level is entirely on account of passenger train service that is going over that line. On the main line, where the through, heavy passenger trains run, beyond a certain point or standard of maintenance there is an expense up to another standard which is entirely chargeable to passenger service, in my opinion. . . . [To raise the standard] ordinarily you would put in heavier rail, probably increase the number of ties to the rail, increase the quantity of ballast, and in connection with that, probably it would be necessary to widen the banks. The same thing, of course, applies to the bridges. . . .
>
> There would be a greater lift of ballast and it would come out more as a shoulder beyond the ends of the ties. The re-working that you speak of, would, of course, be an improvement; that is, it would keep the track in better shape; the more labor you put on to keep up the roadbed and to keep the shoulders in place so the track will hold where it is, where it should be, of course, brings the track to a better standard than it would be if you did not re-work it.

The classification of the Interstate Commerce Commission ignores the factors of natural deterioration and standard of upkeep. As a rule, too, the railroad accounts and public accountants take no specific account of these influences on maintenance costs. In a few cases, such as the Buell case already mentioned,[1] a distinction is made between wear and tear and deterioration, and the two elements are recognized by different methods of apportionment.

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[1] See reference to Buell case on p. 210. Similar distinction made in statistics presented in the Class Rate Advance case (I. C. C. Docket 3500). The Rock Island maintenance expenses were apportioned on three bases: (1) that used by the Rock Island in its own accounts; (2) that provided by the Nebraska formula; and (3) that provided by the Missouri formula. Under bases 1 and 3 the total maintenance of way expenses were apportioned on train miles, but under the Nebraska formula 10 per cent of such expenses were divided on train miles and 90 per cent on operating revenues.

In the Railway Mail Inquiry, 1912, the Post Office Department, in making its own separation of expenses from the figures presented by the railroad companies, divided certain maintenance expenses 10 per cent on train miles and 90 per cent on direct charges under maintenance of equipment and transportation.

IV

Among the various bases which have been used or suggested from time to time, the following may be mentioned:

(1) Train miles.

(2) Train miles and switch locomotive miles combined.

(3) Train ton miles (gross ton miles).

(4) Locomotive miles, road service only.

(5) Locomotive miles, road and switching.

(6) Locomotive ton miles.

(7) Car miles.

(8) Train miles and car miles combined.

(9) Weighted train ton miles and locomotive miles combined.

(10) Direct expenses.

(11) Operating revenues.

(12) Tons of fuel consumed by road and switch locomotives.

The train mile basis is the oldest and has been that most generally used. It was prescribed by the Interstate Commerce Commission in its first (1887) classification of expenses, and prior to then had been used by the Pennsylvania Railroad and other railroads in separating their expenses. It was understood, however, and the Pennsylvania Railroad has always been careful to make the qualification, that the results were worked out only for the purposes of administrative control of expenses, and were not in any sense to be considered " costs " from which any conclusions could properly be reached in considering rates.

When the train mile basis was first used by the Pennsylvania Railroad the differences between the average freight train and the average passenger train were not so great as they are at the present time. Freight trains then were little longer or heavier than passenger trains. Approximately the same type of locomotive was used interchangeably in both classes of service. The train mile then was a fairly accurate unit for measuring joint costs. It was believed that the greater speed of the passenger train justified a charge equal to that levied against the heavier but slower moving freight train.

At the present time the average freight train consists of approximately thirty-six cars, loads and empties, which weigh approximately 1200 tons. The average passenger train has about six cars which weigh approximately 380 tons.[1] The weight of the average freight train, therefore, is more than three times the weight of the average passenger train, and the former has about six times the number of cars.

It is obvious that the use of the train mile basis charges the passenger service as much for six cars or 380 tons as it charges the freight service for thirty-six cars or 1200 tons. This charges too much to the passenger service, even when an allowance is made for its greater speed. The speed of the passenger train undoubtedly causes additional stress and shock, and adds to wear and tear, but it is too much to say that the speed factor equalizes the weight factor, or that the effect on maintenance costs by either train is about the same. If that were true, it would follow that the lighter passenger train causes three times as much damage *per ton of train*, or between four and five times as much *per wheel.*

The Wisconsin Commission, in considering the Buell case, asked Professor W. D. Pence, of the engineering department of the University of Wisconsin, for his opinion on the relative destructiveness of passenger and freight trains. His report, as summarized by the Commission, was:

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[1] This average is for all passenger trains — through, suburban and branch line. A modern through express train, consisting of eight steel cars, weighs about 550 tons.

> The wear of the wheel tread is a good basis for estimating the wear of rails.
> The wear of the drivers is more rapid on freight than on passenger locomotives.
> The wear of drivers on passenger locomotives is not increased as speed increases.
> Hammer blows of drivers is frequently more injurious to rails with freight service than with passenger.
> Passenger rolling stock is less severe on the track and structures than freight cars.
> Rail deflections and roadbed pressures do not increase directly as the speed.
> Cost of raising and tamping track is not increased with increased proportion of passenger trains.
> Tie renewals are chiefly due to decay.

Notwithstanding this definite expert testimony, there is force to the contention that the element of speed should have serious consideration, even tho with the average train at average speed this factor is not a controlling element in maintenance expenses. The design of the locomotive aims to compensate, in some measure, for the effect of speed. Passenger locomotive drivers are larger and are counterbalanced for speed.

The views in opposition to the testimony of Professor Pence were well expressed by Mr. George R. Martin in the Buell case. Mr. Martin, while then and now in charge of the accounting department of the Great Northern Railway, has had extensive railroad experience in the operating department, and at one time was general superintendent of the Montana Central Railway in charge of both operation (including maintenance) and construction. His views, as a broadly trained operating and accounting officer, are entitled to respect. In his testimony he stated (page 2313, stenographer's record):

> The repairs of the track structure, of which you speak, are to my mind caused to a greater extent by the speed than by the weight; that is, the speed of the trains in passing over the track has a great deal of effect in the wearing out of the track, and that refers very particularly to the portions of the track where there are breaks in the running surface. Of course, that means every joint or every frog, or wherever there may be a break in the running surface. . . . The speed involves a blow at the joints and breaks them down, both as to the rails themselves and the rail fastenings and the support that is given by the ballast and the sub-grade.

The advocates of the train mile basis contend further that it is the locomotive which causes the greatest wear and tear to the track. This contention, too, has force. Engineering authorities support the general statement, but differ in their estimates of the weight to be given.[1]

The subject has had the attention of the American Railway Engineering Association. In 1913 a committee of that association presented an elaborate report, which suggested a method for "weighting" locomotives and cars in the two classes of service according to their relative destructiveness on track and structures. The committee's recommendations stated in ratios, were that:

Ton miles in freight service should be considered as 100.

Ton miles in passenger service should be considered as 200.

Locomotive miles in freight service should be considered as 200.

Locomotive miles in passenger service should be considered as 400.

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[1] "The locomotive alone causes by far the greater portion of this wear — how much is not positively known. Freycinet, a French engineer, writer, and politician of much prominence, recently Minister of Public Works, estimates that the locomotive does three-fourths of the damage and the train itself only one-fourth. Launhardt, a German writer on the subject, after noting the fact that the locomotive and tender together constitute only one-fifth of the total weight of train on the Prussian state railways (it would be considerably less in this country) considers that half the wear is due to the locomotive and tender and half to the train. This in all probability is a very moderate estimate." A. M. Wellington, Economic Theory of Railway Location, 6th ed., 1906, p. 122.

The association declined to commit itself to the formula. "There was vigorous opposition to these views, some engineers pointing out that although passenger traffic, as a rule, required more expensive roadbed and better up-keep, the freight trains were relatively as destructive of track, if not more so of track structure. The whole matter was, therefore, referred to the committee for further study, and no subsequent report has yet been made."[1]

V

The gross ton mile basis (total weight of train — cars and contents — multiplied by the train mileage) is highly favorable to the passenger service. This method was advocated by representatives of certain state commissions, and is approved by some railroads which keep such statistics currently as a check on operating efficiency. The average passenger train has less than one-third the weight of the average freight train. Moreover, it takes no account whatever of speed, nor of the weight and greater destructiveness of the locomotive alone as compared to the wear and tear of the cars alone. It is hardly probable that the gross ton mile basis will ever be seriously considered as a basis for the apportionment of expenses, although it was suggested by the public accountants who testified for the protestants in the Western Passenger Fares case.

Even were the basis otherwise unobjectionable, its propriety may be questioned on technical grounds, inasmuch as it is practically impossible to ascertain the weight of the passenger train "load." No record is kept of the weight of passengers, baggage, mail, express, or company supplies, transported in passenger trains. These must be estimated.

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[1] "Apportionment of Railroad Expenses and Property Values on Basis of Use," A. M. Sakolski, Journal of Accountancy, August, 1916.

The road locomotive mile basis gives results substantially similar to those obtained by the train mile divisor, but it is slightly less unfavorable to the passenger service, since it takes account of helper and "double-header" locomotives which are used to a greater extent in freight service. Yet it has the defect of giving an equal charge to the passenger locomotive and the freight locomotive. It takes no account of the weight of the locomotive or its speed, and ignores (as do many other suggested bases) the effect of switching locomotives on yard tracks and on main tracks within yard limits.

To relieve the passenger service of the burden last referred to, another method has been used: road and and switching locomotive miles combined. Since the greater part of switching locomotive miles are made in freight service, its inclusion tends to lighten the charge to passenger service. If the elements of weight and speed are to be left out of account, the road and switch locomotive mile basis is to be preferred to either the train mile, gross ton mile, or road locomotive mile basis.

The locomotive ton mile basis, defined by the Commission as "the product obtained by multiplying the number of tons (2000 lbs.) in weight of the locomotive ready for service (but exclusive of the tender when the tender is a separate car) into the number of locomotive miles made by it," is the basis which was suggested by many railroads in the hearings on the subject before the Interstate Commerce Commission prior to its promulgation (in 1914) of the existing rules. The theory is that the major part of the wear and tear is caused by the locomotive, and is in some degree proportional to its weight. Freight locomotives as a rule are heavier than passenger locomotives, particularly the freight locomotive used to haul full tonnage trains in slow service. This feature automatically takes some account of the greater tonnage in long freight trains, but the difference in the weights of the two locomotives is relatively less than the difference in the weights of the trains. The locomotive ton mile basis to that extent, therefore, favors the freight service. Its advocates claim, however, that the apparent favoritism is fair because of the greater speed of passenger trains.

While it is true that the locomotive ton mile basis was proposed by railroad representatives in the hearings before the Commission, it has by no means unanimous railroad approval. The Committee on Corporate, Fiscal and General Accounts of the American Railway Accounting Officers, has gone on record, since the promulgation of the Commission's rules, as refusing to endorse the basis until more is known of the real relationship between weight of the locomotives and train speed.

The car mile basis has had but limited application. Obviously it is unfair to the freight service, as the average freight train has about six times as many cars as the average passenger train. The car mile basis ignores the differences in train speed and in the weight of the cars. It spreads the effect of the freight locomotive over thirty-six cars, while the effect of the passenger locomotive is distributed over but six cars.

The combination or average of train miles and car miles is occasionally used as a compromise. The train mile basis burdens the passenger service; the car mile basis burdens the freight service. The average of the two may equalize the advantages and disadvantages, but it must be regarded as an empirical makeshift.

The " weighted " train ton and locomotive mile basis is that referred to earlier in this article as the suggestion of the committee of the American Railway Engineering Association. So far as the writer knows this basis has not been tested in practice, and it failed, when presented, to receive the endorsement of the association.

The direct charges basis calls for the division of joint expenses in the maintenance of way group in the same proportion that the direct charges to freight and passenger bear to the total expenses directly allocated. Direct charges include such items as train wages, fuel, allocable station and yard expenses, and the cost of maintaining locomotives and cars. The use of this method is justified on the theory that joint costs which do not lend themselves to any method of exact apportionment should be divided between the two classes of service in the same proportion as the total of the costs which may be directly and accurately assigned. We *know* that it is fair to both classes of service to charge each with its directly allocable expenses; we may *assume* that it likewise is fair similarly to divide the joint expenses.

The same theory is applied to such expenses as are common to one group, in which the major part may be directly allocated. For example, the cost of superintendence under maintenance of equipment is divided in proportion to the direct charges for the maintenance of locomotives and cars. In such cases there can be no objection to the plan, and indeed no better has been suggested. But the propriety of applying the proportions of direct charges in the transportation group alone, or in the transportation and maintenance of equipment groups together, to the common expenses in the maintenance of way group, is questionable. The proportion of direct charges to the passenger service in transportation expenses is likely to be higher than its proportion in maintenance of equipment expenses, and the result of applying the direct charges method to common maintenance of way expenses depends largely upon whether the ratio is confined to transportation direct charges or to transportation and equipment direct charges combined. In the New England Milk case, to be referred to later in detail, the figures indicate that for the road in question, the Boston and Maine, the passenger proportion of direct transportation charges was 46.8 per cent, while the passenger proportion of equipment maintenance direct charges was 29.9 per cent. Combining the two groups of direct charges gave the passenger proportion as 39.6 per cent. As a coincidence merely, that percentage happens to agree closely with the results obtained under the train and car mile, the operating revenues, and the fuel consumption bases.

Operating revenue, as a basis for the division of joint maintenance of way expenses, has been used in isolated cases, and is occasionally suggested. Its only support is the theory of "ability to pay." Maintenance of way expenses, in the main, are joint costs which are not susceptible of any exact division according to use; therefore, according to this theory, they should be recorded as "overhead" expenses and distributed according to the earning power of the two classes of service. It is plain that this involves reasoning in a circle, and it has no justification in determining the reasonableness of rates under investigation. A reduction in the rates in either class of service would have the effect of reducing the apparent cost of that service.[1] If, for example, in a given case, where the total charges to each class of service were equal, the passenger rates were reduced without reducing or increasing the volume of passenger traffic, and caused a reduction of 10 per cent in passenger revenue, then the charge to the passenger service (or the apparent "cost") would be reduced 2.6 per cent and the charge to the freight service would be increased 2.6 per cent,[1] even tho the actual expenses in either class were not affected in any way.

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[1] "If the property is to be divided according to value of use, it is plain that the gross earnings method is not an accurate measure of value.

"The value of use, as measured by the return, cannot be made the criterion when the return is itself in question." Justice Hughes of the United States Supreme Court in the Minnesota Rate case.

In the Western Passenger Fares case the Interstate Commerce Commission, after considering the several methods advocated by the accountants of the carriers and the protestants for dividing maintenance of way expenses, rejected all of them (including locomotive ton miles, gross ton miles, revenue train miles and direct charges in train service and equipment maintenance) and used a direct costs basis of its own, which embraced only seven accounts, viz.:

Road enginemen.
Fuel for road locomotives.
Water for road locomotives.
Lubricants for road locomotives.
Other supplies — road locomotives.
Road trainmen.
Train supplies and expenses.

The Commission accepted the railroads' allocation or apportionment for all expenses except those under maintenance of way, which the Commission divided on the direct costs method just described. In doing so the Commission stated:

> Our decision to use this method in this case must not be regarded as conclusive on our part of the method that should ultimately be used for the division of the maintenance of way and structures

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[1]

	Before reduction in rates	*After reduction in rates*
Passenger revenue	100 or 50%	90 or 47.4%
Freight revenue	100 or 50%	100 or 52.6%
Total revenue	200 or 100%	190 or 100 %

> expenses between passenger and freight. The objections against the direct charge method are known and appreciated. If, for example, a marked increase in wages of enginemen on passenger trains takes place, the result under this method is to increase the amount of unallocated expenses assignable to passenger business, while the actual utilizations of the track and structures by the two branches of the service remain unchanged. We are using these direct costs in this instance to determine the apportionment of unallocated expenses between passenger and freight because the objections to this method seem less forceful than those that have been urged against any of the other methods proposed.[1]

The Commission's decision to use this selected direct charges method in that case is interesting, as it is of comparatively recent date (decided December 7, 1915) and, notwithstanding the statement that it "must not be regarded as conclusive" it may give some indication of the trend of thought in the minds of the commissioners and their statisticians.

VI

In the New England Milk case (40 I. C. C. 699, decided July 11, 1916) the writer was engaged by the Boston and Maine Railroad to prepare its statistics pertaining to the milk revenue and the proportion of expenses which properly should be apportioned to the milk service. The Boston and Maine handles milk both on passenger trains and freight trains. It was necessary, therefore, first to divide expenses between passenger and freight, and then to apportion the charges in each class of service to the milk traffic in that service.

In the study of the problem it occurred to the writer that the tons of fuel consumed by road and switch locomotives should furnish the least objectionable and the most defensible basis for apportioning the joint expenses under maintenance of way. The decision in the Western Passenger Fares case was published when the figures were being compiled, and it seemed to the writer that if the Commission could tentatively approve a direct charges method which essentially included only fuel and wages of train and engine crews (since water, lubrication, and other supplies are usually divided arbitrarily on fuel issues, locomotive miles, or locomotive ton miles) they could also approve the basis of fuel issues alone. The tonnage of fuel consumed is unaffected by variations such as those mentioned by the Commission.

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[1] 37 I. C. C. 23.

Before discussing the fuel basis, it may be stated at this point that while the Commission conceded what the Boston and Maine statistics purported to show, that is, that the milk traffic, under the rates then in effect, was not assuming its fair share of expenses, yet it did not approve the fuel basis as a divisor for maintenance of way expenses. Nor did the Commission suggest an alternative method.

So far as the writer has knowledge, fuel consumption as a basis for dividing maintenance of way expenses has been used only in the case just referred to. It is prescribed by the Commission as the divisor for the cost of maintaining water stations and for the division of the cost of water used by locomotives. The protestants in the New England Milk case, therefore, were justified in characterizing the fuel method as " novel and untried."

The theory upon which the fuel basis is offered as a substitute for train, locomotive and car miles or combinations thereof, is that it is a more scientific measure of use. Fuel consumption, in a large degree, is proportional to the horsepower developed. Horsepower is the resultant of locomotive tractive force and speed.[1] A

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[1] The formula is:

$$\text{Cylinder horsepower} = \frac{(\text{Tractive force in lbs.})\quad(\text{Speed in miles per hr.})}{375}$$

given number of horsepower may be utilized in hauling a heavy train at slow speed or a light train at high speed. Speaking in general terms, in locomotives of similar design, the horsepower developed is closely related to the volume of steam used in the cylinders, and the steam production in boilers of similar design is in turn closely related to the amount of fuel consumed in the firebox. There is, however, a critical point in the piston speed at which the horsepower efficiency is greatest.

Since the horsepower developed is directly proportional to the speed of the train, it follows that the fuel consumption by a given train increases somewhat in proportion to the speed of the train. Fuel consumption, however, does not vary directly with speed, yet it bears a close relation to it. It is impracticable to show the relation exactly by formula, because of the many variable factors which affect train resistance and locomotive boiler and cylinder efficiency; but the indications of many tests support the statement that as between trains of different classes on the same division, the fuel consumption, as a measure of train horsepower, automatically equates for both weight and speed. It takes account of the weight or power of the locomotive, the weight or number of cars, and the speed of the train. It affords, then, the only least common multiple yet suggested that has some claim to the term scientific.

From an accounting viewpoint the fuel basis is desirable as it requires no special compilations when (as should be done for other purposes) fuel consumption statistics are kept separate for the three classes of service — freight, passenger, and switch. The use of the locomotive ton mile basis, on the other hand, requires the keeping of special statistics for that purpose alone, and, moreover, the basis is less scientific.

The range of difference in the results obtained by using several of the bases which have been discussed, may be seen if they are applied to the maintenance of way and structures expenses of the Boston and Maine Railroad (using the figures contained in the evidence presented in the New England Milk case). The total charges to that group of expenses during the year ended June 30, 1915, were $7,118,602. A small part of these expenses were allocated directly, but for the purpose of illustration we will apply the several methods to the total of the entire group of maintenance of way and structures. They are arranged in the order in which they burden the charge to passenger service.

	Chargeable to Passenger Service	
Basis	Per cent	Amount
Revenue train miles	60.7%	$4,320,991
Revenue road locomotive miles	57.1	4,064,722
Revenue road locomotive ton miles	53.0	3,772,859
Direct charges; transportation costs only	46.8	3,331,506
Revenue train miles and car miles	40.6	2,890,152
Fuel consumption; road and switch locomotives	40.0	2,847,441
Direct charges; transportation and equipment	39.6	2,818,966
Operating revenues	39.3	2,797,611
Gross revenue train ton miles (estimated)	33.3	2,370,494
Revenue car miles	20.6	1,466,432

The difference between the charge to passenger service on the train mile basis, $4,320,991, and the charge on the car mile basis, $1,466,432, is nearly three million dollars. It will be noted that there is little difference in the results under four of the bases, viz., train miles and car miles combined, direct charges under transportation and equipment maintenance, fuel consumption, and operating revenues. The Boston and Maine exhibits in the milk case were computed under the fuel consumption basis.

If the perplexing difficulties surrounding the apportionment of maintenance of way expenses can be satisfactorily overcome, the problems connected with the division of other operating expenses are comparatively easy. The rules of the Commission applying to maintenance of equipment, traffic, transportation and general, are sound and workable. They have been described earlier in this article.

As stated in the beginning, the scope of this article is purposely confined to the one subject of separation of operating expenses between the freight and passenger services, and to suggest the fuel basis as the least indefensible divisor for joint maintenance of way expenses. To pursue the subject further would require an extended discussion of two general problems closely allied to the freight-passenger apportionment, viz., the separation of expenses by states, and their separation between terminal and line. Or we might go further and undertake a discussion of " splitting the homogeneous fibres of a single cost jointly caused " in attempting to ascertain the " cost " of hauling a particular commodity.

These problems are now under discussion in an important rate case in Central Freight Association territory. The railroads in interest are attempting to work out an assignment of expenses:[1]

(1) To States.
(2) Between line (or hauling expense) and terminal (or station expense).
(3) Line and terminal between freight and passenger.
(4) Freight — line and terminal — between state and interstate.
(5) Passenger — line and terminal — between state, interstate, and mail and express.

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[1] This assignment follows closely the Oklahoma formula which is well described by Hooper (Railroad Accounting, chap. 15).

The railroads in eastern territory are now engaged in a study the results of which may throw some light on the moot point of the proper spread between the rates on car-load and on less-than-car-load shipments of the same commodity.

The railroads of the entire country are confronted with the necessity for preparing figures which will show the relation between the cost of carrying the mail and the revenue under the new car-space basis.

These cases give some idea of the far-reaching importance of the apportionment of operating expenses. The primary separation between passenger and freight is only one step in the process. Each additional step presents its new problems. It is desirable, therefore that the Commissions, both State and Interstate, and the railroad accounting officers, should make a serious effort to harmonize conflicting ideas and practices, and to agree upon some definite and comprehensive plan of expenses apportionment.

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WORK AND PAY: A SUGGESTION FOR REPRESENTATIVE GOVERNMENT IN INDUSTRY[1]

SUMMARY

I. The determination of work; job analysis, 242. — The several parties concerned in job analysis, 243. — A Determining Board representative of these parties, 244. — Length of working day, 245. — II. How much pay? 247. — Payment for risk to capital, 248. — Workers also assume risk, 249. — Other elements of cost; interest and dividends, 250. — Depreciation, cost of materials, 251. — This procedure the reverse of that usually followed, 252. — Salaries and wages the residuum, 253. — Wages settled by the Wage Board, 254. — Risk likely to be more frankly considered, 256. — Summary and conclusion, 257.

THE conflict in industry today centers about two distinct, altho closely related, problems — the determination of a reasonable day's work and of a reasonable day's pay; each of which can be adequately stated only when viewed in the light of the other. Reduced to simplest terms, the two-fold question is this: first, how can we determine a satisfactory day's work from the point of view of health and productivity; secondly, on the basis of such a determination of daily achievement, what what shall be the pay for it? An intelligent attack on these problems involves: (*a*) the obtaining and use of data from exhaustive, objective studies of definite jobs; and (*b*) the creation of certain forms of organization which, in the conclusions based on such studies, will register the interests and attitudes of all concerned.

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[1] The major part in the preparation of the first draft of this paper was taken by Mr. Valentine, whose much lamented death, November 14, 1916, prevented collaboration on his part in its revision. The idea of separating the two fundamental problems — work and pay — was his; and it was he who suggested the establishment of two distinct boards, a Determining Board and a Wage Board. His experience as Director of the Joint Board of Protocol Standards of the Dress and Waist Industry of New York City had strengthened his faith in the essential principles involved, and he had submitted to the employers and the union in that industry recommendations based on them.

ORDWAY TEAD.

I. The Determination of Work

To identify all the elements working immediately and potentially to determine what a given job and the attendant conditions are and shall be, requires intensive study. To such research the name "job analysis" is here given. We shall use it throughout this discussion as meaning the exhaustive statement of every item involved in a piece of work itself and in its relations to other jobs in the organization where it exists, with especial emphasis on the effect of work upon the worker.

Job analysis includes time study, motion study, fatigue study. It embraces all the complex facts of working conditions, such as labor legislation; labor turnover in the given plant and in the industry as a whole; competence of management; living provisions — in short, all the many factors which affect the job and the worker. The job analyst makes a study of "job ratios" — i. e., as accurate an estimate as possible of the comparative difficulty, disagreeableness, and need of dexterity inherent in the specific piece of work. By estimating the maximum amount which the best worker or workers might achieve under the best conditions, job analysis establishes a tentative standard of output, and against this standard grades the workers of varying degrees of skill and estimates the relative amounts of output which can in all fairness be expected from them under actual conditions. This sketch of job analysis, its purpose and possibilities, will suggest some of its significant values and uses. To know what the elements of a job are, must always be the first step toward determining whether the particular piece of work is necessary, how it affects the worker, and what degree of skill and endurance it requires.

Job analysis, like time study,[1] cannot, however, be entrusted to employers alone. For, in the light of the analysis, redefinitions of work and readjustments of methods may seem urgent of adoption which are so radical in character, so far-reaching in results, that their introduction can only be made with safety to the worker when his judgment on the matter is utilized and his consent secured. The worker must have protection. In the long run this protection cannot be furnished by someone else. One's interests can be permanently and satisfactorily safeguarded only by one's self or one's accredited representative. Without this self-protection trouble is bound to arise sooner or later. It is only a question of time when the unprotected or the employer-protected worker is either stirred to revolt or drained of energy, vitality, and self-respect.

This being the case, we face the second part of our first problem, which is to suggest the forms of organization necessary to voice the worker's interests where job analysis is adopted. Once known, the interests not only of the workers but of all can be drawn into the open and assured an adequate voice in making decisions in matters affecting them.

What, then, are the several interests in an organization which actually if not avowedly participate in these decisions about the statement of jobs? In general terms, are they not the following? 1. The management whose interest is obvious since it is responsible for administration and output. 2. The employees as a whole, who have a vital interest, since no job can be defined without taking from or adding to the responsibilities of some other positions in the organization. 3. The workers at the particular process, who inevitably have a great interest in its correct statement. 4. Whatever agency has conducted the actual scientific research and drawn up the tentative job analysis. (Where a factory organization has undergone a logical development, such analysis would be the special research function of the personnel department.)[1]

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[1] See articles by Robert F. Hoxie, "Why Labor is Opposed to Scientific Management," Quarterly Journal of Economics, November, 1916, and Robert G. Valentine, "The Human Element in Production," American Journal of Sociology, January, 1917.

It is not denied that other factors might conceivably enter into the determination of work, but practically these four groups are the indispensable parties to the final agreement as to what any particular job actually is. In short, the management, the employees as a whole, the workers at the task in question, and the research division are the first court in work decision. They constitute a Determining Board to determine every job.

It is unnecessary in a preliminary study like the present to do more than suggest the relation which this shop organization might have to existing organizations of workers by crafts or industries. It would naturally follow, however, that if there were a craft union of workers at a certain job, this union might be called in to represent the workers, either in a mediatory capacity or to be one party to arbitration proceedings in which the third and outside participant would be a representative of the consumers, or public. In those extreme cases where differences proved incapable of immediate amicable settlement, the union would be the natural organization to conduct a strike. In the same way, an industrial union representing all the workers of an industry might be called into action where disagreements assumed an industry-wide character. The ultimate necessity for this outside affiliation has already been met by a similar wider affiliation among employers not only by industries but between industries. As issues become more extensive there would be a representative body of all workers and of all employers in an industry, as well as the public's delegates, to settle the most momentous disagreements. It needs hardly to be pointed out that this alignment makes an actual resort to strikes far less likely, because their reason for being is so largely removed.

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[1] This reference to the research division as well as the subsequent mention of the employment division, assumes the existence of a Personnel Department in an industrial organization. The purpose of this staff department is to handle all matters that affect the workers. A competent department would include (1) the employment division, (2) the training division, (3) the research division.

The important point is to have justified the logic and validity of the internal Determining Board, with its opportunity for outside appeal if that becomes necessary in order to protect the rights of any of the parties.

Assuming now that the Determining Board is established, what are its functions? At any particular job there is a certain length of the work day, within which it is more or less definitely ascertainable that a person can work at a certain general rate of speed (varying from hour to hour and day to day and to some extent from season to season, but still running through the year at a fairly level average) without any question of physical or mental deterioration arising. Within this healthy working day, whatever it may be, it is obvious that slovenly, slipshod or slow work on the part of the worker who could work faster without exceeding the limits of physical and mental health, is against the interest of the employee from the point of view of both his own skill and self-respect, to say nothing of the ultimate lessening of his earnings due to low production. From the point of view of his costs such poor work is against the interests of the manufacturer. From the point of view of the character of the individual and of the economic cost of the product, it is against the interests of society. It is very decidedly to the advantage of everybody — worker, employer, consumer — that once the length of the work day and a safe speed of work are agreed upon, each should see to it that a full day's work is done. Upon this point a substantial identity of interest exists.

If the time comes when a reduction of hours is demanded below this agreed length of work day, then indeed opposing interests come into play — of the workers, of the management, and of society. To adjust this conflict of interests will require one of the three available methods — conciliation, arbitration (i. e., adjudication by a third party) or the use of the strike. But for the near future this is not the critical problem. Our anxiety is not yet over workers who may be declaring for a seven-hour day. The great majority of nine, ten, and eleven hour a day toilers demand profound and immediate concern.

The point of contention, owing to meager knowledge and inadequate scientific technique, is as to what *is* a reasonable length of work day and safe intensity of work. The determination will depend upon almost infinite variables between factory and factory and industry and industry, as well as between worker and worker. In many cases a combination of studies of past production records and time studies will eventually give the standards of an operation in point of required time and safe speed. As modifying these there must be intensive study of the influence on the job of accident and fire risks, of ventilation, heating, humidity, cleanliness, lighting, toilet and drinking water facilities, noise and vibration. One of the vitally important points in the four-fold representation for agreeing to the details of a job is that in this way alone will these and other variables receive proper weight and recognition. But altho each party to the transaction is keenly alive to protect his own interests, this is far from involving a hopeless conflict. The findings of the research division as to the facts about a job afford a definite starting point. To the extent that exact knowledge is at hand, possible disagreement is reduced. Even so, the field where judgment and opinion obtain will still be large. It will remain for the Determining Board out of the many-sided experience of its members to give weight to the variables in such a way as to insure that the final statement of a piece of work is as honest a one as human intelligence can secure.

II. How Much Pay ?

If we can now assume a knowledge of the fair average expectation of work from workers of varying degrees of skill, and assume that this work is agreed to by all parties and is performed, the question arises as to the basis upon which it shall be paid for. This involves a consideration of the factors which will throw light upon the financial affairs of the industry and individual plant.

We have first to survey the field of present practice and tendency in analysis of the factors recognized. What is the basis upon which the several claimants for a share of the gross income divide that income and should divide it ?

There have in the last few years, been any number of so-called " advanced methods " of pay which aim at securing closer relation between efficiency and reward. The fundamental difficulty with them all is that the basis of each has been the " going rate of wages." To admit, as they do, that base rates equal " standard rates in the district" or are some percentage more than such rates, is to throw away the case so far as any claim to scientific division of earnings goes. If the problem is to be faced through from the beginning, there must be consideration not only of present payment practices in industry but of the meaning and uses of an American standard of living.

It is admittedly confusing to try to deal with payment plans because of necessity present practice and possible future practice will have to be considered not as two distinct systems, but as one gradually being modified into another. It is our assumption in this discussion that the tendency toward larger, non-competing[1] producing units is desirable and that both state and nation will be required to increase control and regulation. If there is ultimately to be in business at large any such oversight as now prevails in the public utilities at the hands of the various public service commissions, we are in sight of more intelligent arrangements in which at the very least the cards of the owners and users of capital are on the table. The importance of this in the division of earnings will next be considered.

If we approach the problem from the angle of present practice, we must consider at once who assumes the risk in industrial operation. This must be considered because in stating the cost of production the extent of risk is in the last analysis the point which occasions greatest controversy.

Do the owners and borrowers of capital assume all the risk? Profits accrue to them today because it is conceived that they are the initiators, responsible agents, and, if necessary, the losers in industrial development. That this is true as a general proposition seems plausible.

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[1] I. e., "non-competing" in the sense that they are not competing for markets.

And in certain fields, particularly in marketing new commodities, there *is* a risk that none but relatively few in the community are willing to assume; and the extension of industrial activities is at present wholly dependent upon their assuming it. But these cases can fairly be left out of consideration because of their relatively small number in proportion to the total production. Setting aside these exceptions, and viewing the problem as industry exists today — not as it has been developed but as it stands today — the extent to which investors and enterprisers in industry assume risk is a matter as to which each case must be considered separately. The risk is one thing in a highly competitive business where the demand is new and destined to rise; it is another in a monopoly; it is still another in a declining business doomed to disappear.

Moreover, the risk that the employees assume is by no means inconsiderable and is consistently ignored in most discussions of the subject. It frequently happens today that the capital owners or enterprisers have " more than one iron in the fire " and " their eggs are not all in one basket." Furthermore, the owners are in a position to wait for their returns. And, finally, they definitely plan to compensate themselves for bad years by the reserves and surpluses of good years. Not so the workers. Their eggs *are* all in one basket. They cannot wait long for their returns. They have little or nothing to tide them through bad years. They are expected to come for work where work is offered; work for little more than subsistence rates while it is offered; and get out when it is finished. Theirs is the greater risk in the sense that they put all their strength — their working capital — at the disposal of a given enterprise. Its success or failure is their livelihood or unemployment.

There appear, therefore, to be really two kinds of risk distinguishable by their consequences. To the capital provider the risk is a property one — usually a matter of only part of his holdings. To the manual worker it is a human one — a matter of personal and family sustenance.

It would probably be true that the extent of the capitalist's risk would depend in part upon the proportion of his total capital that was committed to one venture. And altho no technique has yet been developed for accurately establishing the extent of risk which he assumes, that does not mean that it is impossible. There have not yet been publicly available the data necessary to begin to formulate a method. Up to the present the best we have been able to do as consumers is to try to protect ourselves by a variety of means from claims for excessive risk-earnings. These means include, for example, publicity of certain corporation accounts, the taxation of unearned increments, of incomes, special privileges, franchises, royalties and patent rights.

The workers as distinct from the consumers will have to protect themselves by some other means such as we shall presently outline.

Leaving, for the moment, the question of the cost of risk, let us proceed to a summary of the other elements in production costs, since this offers the readiest method of arriving at a knowledge of the amount available for wage and salary earnings. The next point that arises — as to whether interest and dividends on capital shall be a cost charge or not — is one that is still a much mooted question in the accounting world. At least a part of the occasion for debate is that those who are getting high profits on the pretext of the great risk involved know that in many instances a careful analysis of their business would justify the disbursement of earnings little if any above the current interest rate for that industry. In these instances, if the interest charge computed at the current rate for the industry were made one of the costs of the business, instead of being left as now a variable amount contingent upon the concern's profits, the surplus would be so large as to occasion a protest from consumers on the score of the high cost of the commodity and from the workers on the score of low wages. If, therefore, we are ever to get the conditions of a business clearly before us, the interest charges should be definitely limited, or be on an agreed sliding scale. This item should then constitute part of the cost. This means, of course, that so much of interest as is supposed to be a payment for risk will no longer figure as a part of interest, but will be treated separately on its merits, either as another item of cost or as one of the items to be met in the division of that residuum which we are about to arrive at.

The changes made for depreciation and for reserves may at any time become the subject of controversy. For these items also it is impossible to generalize as to what would be a fair allowance. But as long as amounts thus written off are publicly known the possibility of abuse is reduced.

The cost of raw materials is, so far as we are here concerned, a fixed item; as is also the charge for patent rights. A further cost, the importance of which is now being understood, is that necessary to keep working conditions up to a high human standard. This should include provision of the best contrivances in matters of sanitation, ventilation, prevention of fire, sickness and accident.

Finally, a knowledge of the selling price of the goods produced will enable us to find the amount which is left to pay for the services of managers and manual workers and possible additional pay to the risk takers. The selling price depends, of course, upon many conditions. But in general, we know that the price at which an article will be sold is governed by the expectation of a certain demand for a certain amount of product. And in a well-established market the amount that can be sold and the prices at which it is possible to offer goods are both greatly limited.

We can, then, as a general proposition come to this conclusion: the amount left after deducting the above costs from gross income will give the amount that is left for division among the active agents, head and hand workers, in a business.

All this will, of course, seem a completely backhanded way of going at the problem to those familiar with the thesis that labor is to be bought in the cheapest market and that wages are one of the principal costs which the risk takers, as initiators of enterprise, must meet. Our procedure has completely reversed prevailing practice. But any consideration of the problem that is going to face every factor frankly, and most important of all, is going to give workers confidence in the rates that are set and consumers confidence in existing prices, will have to result in some such attitude toward the costs of production. For it is at this point, the discrepancy between the earnings of workers and owners, that the prevalent unrest is most acutely occasioned.

There is a growing tendency to consider the division of earnings on this ultimate basis. It does not mean that tomorrow any business can say definitely what its residuum is and sit down to haggle with employees over its distribution. But certain definite steps toward a more equitable arrangement can be at once taken by any company. It is clear that actual payments to workers cannot be made only once a year, after the results of the year's business have become known. Weekly drawing accounts must be settled upon, and how the amounts of these can be arrived at is the next question. If at the end of a year there is still a net surplus after all these charges have been met, we have an amount which can be apportioned between workers and risk takers on a basis which will also have to be agreed upon.

How, then, to settle the amount due the president, the office boy, and the truck hand? Clearly the first duty will be to establish a minimum rate below which no worker will be paid. And this minimum must be set on a flexible scale in the light of a thoroly contemporary knowledge of a wholesome standard of living in the locality — a standard that includes all the elements that make for a progressive citizenship. In order to standardize throughout industry an approximately equal minimum basis, it is increasingly recognized that certain operating standards must be upheld by legislation. These standards seem destined to include a minimum wage, safe and wholesome working conditions, accident, sickness, and unemployment compensation, and, if necessary, a pension during old age.

If we can next get some notion of maximum salary, we are then left to the most trying problem — settling the amounts of earnings between the extremes. For some time to come it would seem that the law of supply and demand working to adjust earnings in the field of executive and administrative positions would not lead us very far astray. Able administrators are rare. Their value is appreciated more and more throughout the industrial hierarchy. Business owners and workers as well are showing themselves willing to pay what they must to get the right type of leadership. Moreover, the effect of publicity and the increasing influence of the wage workers in these matters will be an invaluable corrective force.

As to the work of manual laborers themselves, present practices checked by thoro job analysis will give some rough indication of the relative value of the several tasks in a factory. Beyond that it would seem that the finer adjustments are subject to the indefinite pulling and hauling of several forces in an effort to establish a momentary equilibrium. A sense of humor must keep us from feeling any ultimate certainty or security in fixing one man's worth as so much and another's at a few cents more. This cannot be done on any absolute basis. But we can do the next best thing. We can get the interested parties together and let them thrash matters out with the financial and technical facts fully before them.

The same argument, therefore, seems to hold here that was advanced in the case of job determination. The several forces at interest in any decision must be represented in making it. There the matter to settle was the amount and quality of work; here it is the amount of pay for that work. The representative body that settles this question is called the Wage Board. It represents the managing interests, the workers as a whole, the workers at the particular operation, and the financial or capital owning interests, as distinct from those of management.

Whether the rate set be a week rate or a piece rate or some combination is a secondary point. Any of these may offer sufficient incentive and adequate yearly earnings. With certain kinds of work a piece rate carefully set can be an equitable method of payment. To insure this, both worker and employer must be specifically protected — the worker from rates set too low, the employer from a sporadic and irregular output which may result when piece work is done at the employee's convenience. The worker must secure a piece rate sufficient to offer an adequate weekly wage if a reasonable speed is attained. The employer is justified in demanding that finished work be forthcoming with a regularity known in advance sufficiently to enable work to be routed through the factory in a systematic fashion and delivered promptly as ordered. This end would be secured if amounts of output were jointly agreed to.

If the job analysis be properly made, so that the achievement of the worker week in and week out can be checked against a fair expectation, weekly wage payment probably offers the most generally satisfactory method of pay, when everything is taken into account. This does not mean that every worker is paid the same. On the contrary, since the Determining Board has already furnished certain indications as to the relative capacity of the slow, medium and exceptional worker, the Wage Board has at hand a useful gauge in helping it to decide what different weekly earnings it will give for different amounts of output at each job.

The important point is, and this corresponds with the most successful prevailing practice, that the unit of time taken to judge the worker's achievement and capacity must be a relatively long unit, which admits of a recognized fluctuation in a person's work from hour to hour and day to day. If the work of an employee is averaged over a given period from adequate production records, there can be little dispute whether he had over that period turned out an amount of output agreed to as reasonable for those of a certain degree of skill.

All this reënforces our point as to the necessity of the workers' participation in settling what will constitute fair rates. It may be urged that were the rate fairly set, no need for the worker's voice in the matter would arise. But what is " fair " is precisely the question in dispute. Moreover, in the long run no one can be relied upon to have perpetual concern for anybody's interest but the person himself. There is nothing invidious about this. It is a fact. And it is decidedly characteristic of the best human nature that we know. It simply means that no one dares, or should dare, to speak finally for another in matters closely relating to that other's well-being. The "fairness" of wage divisions is dependent upon all interests receiving equal consideration.

The participation of the workers as a whole in the decision as to rates and amounts of earnings is the final safeguarding provision, since under fair conditions no one is in better position to judge of a man's attitude toward his work and his success at it than those among whom he works. The amount that goes to one group of workers will also limit by so much the amount available for the others. There are therefore in several directions checks and balances upon the process of distributing earnings.

It is interesting to consider that in addition to giving adequate recognition to the worker's claim for a voice in dividing earnings, this method offers the only real protection to the business administrator. By the presence of representatives of other interests than those responsible for immediate output, he is almost automatically prevented from trying to gain a short time advantage in these matters, as against the really more valuable long time advantage which a policy of human conservation would afford.

To return now to the question of payment for risk, it is seen to be a difficult one from the point of view here established. But that a more representative control in industry would mean an ignoring of the risk element is unlikely. It cannot be ignored. But it still remains to decide who will be asked or allowed to assume industrial risks. This must be the subject of another discussion. We can be sure, however, that under more widely distributed control the reward to risk takers will tend to approximate more nearly the risks which the facts of a given industry show that the enterprisers assume. For some time to come, of course, the distribution of net surplus will remain with boards of directors representing predominantly the capital owners. But how much surplus will be accumulated, and whether it will be used for extra dividends or stock dividends, is a matter of vital importance not only to the owners but to the workers and consumers. And these groups are destined to take a hand in influencing the results if any fairer distribution is to take place.

The advantages of the method here proposed for dividing the net earnings of a business may be summed up as follows:

It automatically gives the workers and the public the protection which comes from knowledge of expenses, of gross earnings, and of the residuum.

It tends to make individual earnings more nearly correspond to the worker's interest and effort.

It makes participation in the control of industry not simply a "right" but an arduous responsibility of workers and consumers.

It protects the employer from the temptation to false economy in low labor costs.

It tends to give to owners of capital only as much as it is necessary to pay to get capital; since it states separately the costs of managerial ability, risk and capital *per se*.

All this proposes to introduce into the financial aspects of the discussion many considerations which are not current practice in any but public service corporations — some not even existent there. In public utilities the community has come to see the logic of publicity and limited dividends, in order that it be in a position to decide the merits of increases in capitalization, changes in rates, the justice and expediency of wage demands and the like. In exactly the same way, as the problem of the division of earnings in what we today call private industry goes before wider tribunals these relevant facts must be forthcoming. And they stand increasingly to be forthcoming on the assumption above made, that those who do the work are to participate in the residuum which is left after the other more or less fixed charges upon industry are met.

Robert G. Valentine,
Ordway Tead.

THE GERMAN STEEL SYNDICATE

SUMMARY

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The union of the leading German steel manufacturers in the steel syndicate in the year 1904 brought into existence the most comprehensive combination in the German iron industry and, next to the coal syndicate, the most powerful of all German cartells. Its organization was of the advanced cartell type, providing adequate machinery for the purposes of the combination, chief among which were limitation of production and control of price.[1] The steel works owners became members of the Association of Steel Works Owners and at the same time stockholders of the steel syndicate, which constituted the sales and administrative agency of the combination. With this limited liability company they were bound as producers by contracts which obligated them to sell certain types of steel products exclusively to the syndicate in specified amounts for a period of three years. The syndicate sales agency dealt only with the so-called A-products, including railroad and structural steel, and heavy-steel manufactures such as ingots, blooms, billets, and sheet plates. The large group of more highly finished articles, such as bars, wire rods, sheets and plates, called B-products in the syndicate contract, were merely limited as to volume of production; they were not handled by the syndicate.

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[1] The organisation of the steel syndicate and its operation to the end of 1905 are fully treated in an excellent article by Dr. Francis A. Walker published in this Journal, May, 1906, pp 353–398, to which the reader is referred. In addition to the sources there cited may be mentioned the subsequently issued Denkschrift ueber das Kartell-

It was the hope and ambition of organizers so to extend the scope and power of the steel syndicate as to include B-products. How far actual developments have diverged from original aspirations will appear in the course of the present study. The internal history of the syndicate is largely concerned with the efforts made to maintain and increase its control in this direction and in others.

I. THE FIRST PERIOD, 1904–07

As organized in 1904, the steel syndicate was not regarded as complete with respect to control or perfect as regards organization. In three directions lay possibilities of increasing the market control of the combination: first, in an increase of its domestic control over A-products, 90 per cent of the production and sale of

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wesen, Teil I, 1905, (Drucksachen des deutschen Reichstages, 11 Legislatur-periode, II Session, 1905–06, Nummer 4); hereafter cited as Denkschrift. Cf. also the Report of the Federal Trade Commission on Coöperation in American Export Trade, 1916, Pt. I, pp. 214 et seq.; Pt. II, pp. 3–19.

which it governed as early as the beginning of 1905;[1] secondly, in an extension of its power to lighter steel, the so-called B-products; and lastly, in the protection of the domestic market from foreign interference.

(1) The manufacture of the remaining 10 per cent of A-products was divided among several large concerns: one in Westphalia and the others in Upper Silesia, and a number of the smaller open hearth works located chiefly in the Siegerland iron region. The Westphalian Steel Works Company could not be induced to enter the syndicate during the period of its first contract; but with the Upper Silesian concerns the combination was more successful. After protracted negotiations resulting in the formation of the Upper Silesian Steel Works Union dealing with lighter steel, so organized as to coöperate with the syndicate in heavy products, those Upper Silesian firms which had not joined at the outset finally entered the syndicate in 1905.[2]

The open hearth works controlled but a small proportion of the total steel production and most of this was ordinarily manufactured into B-products which enjoyed a well-defined market preference. Accustomed to disposing of their entire output upon the domestic market, they were averse to joining a combination in which they would be compelled to share the costs of fostering the export trade by means of bounties to be paid to their exporting competitors. There were advantages in remaining outside. Production could be increased without restraint when the market seemed favorable. They saved the expense of cartell membership. They believed that the steel syndicate could not afford to break the market for heavy steel by price cutting merely in order to silence the competition of producers of so small a fraction of the total.

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[1] Berliner Jahrbücher, 1905, p. 105.

[2] For details cf. Kontradiktorische Verhandlungen, vol. iv, pp. 278, 475 et seq.; Denkschrift, pp. 14, 50, 316; Kartell Rundschau, 1904, pp. 450, 532; 1905, pp. 372 et seq., 423, 490; Quarterly Journal of Economics, vol. xx, p. 375.

The steel syndicate endeavored to persuade, then to coerce the open hearth works, by increasing the prices of raw material through readjustment of freight bases, into joining the cartell; but to no avail.[1] Negotiations were resumed after an unsuccessful attempt to syndicate bars in 1905, but were likewise fruitless, altho seconded by the coal syndicate at this time. The open hearth works were the best customers of the coal and pig iron syndicates. Members of the steel syndicate themselves almost without exception bought no coal and pig iron; they produced their own, and hence had also become influential members of the coal and pig iron combinations.[2] As members of the latter cartells they wished to retain the open hearth concerns as customers; yet as members of the steel syndicate, they found the competition of these concerns at least potentially annoying. Efforts to bring the latter into line were finally abandoned; their entrance into the syndicate was of small importance when consideration of the extension of the steel syndicate itself was taken up in 1906–07.

(2) The control of B-products would have added immensely to the power and comprehensiveness of the steel syndicate. At the outset it was firmly intended to bring about their inclusion as soon as possible, and the restriction imposed upon their production by the syndicate agreement of 1904 was regarded as a first step toward the goal. As the then existing combinations controlling particular classes of B-products expired, they were to be absorbed one by one, until lighter steel should be as firmly controlled as A-products. The steel syndicate was in no position to take action until its

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[1] Kartell Rundschau, 1904, pp. 449, 750; Berliner Jahrbücher, 1906, p. 115.

[2] Kartell Rundschau, 1905, pp. 106, 194, 492.

members had designated their intended group division of the total B-allotment, which was to be declared in the fall of 1904. By that time the outlook for the successful consummation of plans to syndicate B-products had grown considerably darker; in fact, even the continuance of the existing specialized combinations[1] had become doubtful. The steel syndicate therefore postponed the attempt to control these products, and directed its energies to the retention and expansion of the threatened existing cartells of sheet, wire rod, and tube manufacturers, and the formation of other cartells for the branches not already organized. In order to be effective, such combinations must include the large integrated members of the steel syndicate itself as well as the independent rolling mills. The steel syndicate, as the chief source of the raw material used by the latter, desired that its customers should be in a position to shift any advance in the price of raw materials and to maintain them at a profitable level; since thereby complaints as to the prices of half-finished products would be eliminated and the ultimate inclusion of B-products facilitated by satisfactory combination experience on the part of the independent mills.

The coöperation of the members of the steel syndicate was thus essential to the success of any combination of the producers of B-products; for with the lower costs of production of the great integrated concerns, they could by their competition wreck any cartell of independent producers. Given the entire willingness of its own members to join a proposed cartell for B-products, the steel syndicate could exert pressure upon independent concerns to join, by controlling the output and prices of

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[1] For all the particular groups of B-products except steel bars there existed at the time of the organisation of the steel syndicate, special cartells many members of which became members also of the larger combination. These were, specifically, the light sheet, the heavy sheet, the wire rod, the gas pipe and the boiler tube cartells.

A-products, especially of half-finished products used by the independent rolling mills, to the disadvantage of the recalcitrant firms. Cutting off supplies was indeed not ordinarily effective, and merely gave an opening to the open hearth works. But the syndicate might grant concessions in prices and terms to those firms which acquiesced in its wishes. The usual form of concession was the grant of the so-called export bounties.[1] Beginning in 1905, bounties were consistently granted for the encouragement of the export trade to those manufacturers only (otherwise qualified) who were organized in cartells to which the bounties were paid for subsequent distribution among members. And later in the same year, the strictness of the provisions relating to bounties was further increased by the requirement that both domestic and export trade must be under cartell control to entitle the combinations to the export bonification.[2] The wire rod, the gas pipe and boiler tube, the wire nail and the sheet combinations thus qualified; but the grant to the wire rod and the wire nail associations was made conditional upon their extension beyond April, 1906. An exception was made in the case of bars; it was considered impossible to form a syndicate, and bounties were nevertheless granted.[3] The extension of the wire rod combination and the formation of the Black Sheet Association are to be ascribed chiefly to syndicate policy with regard to export bounties.

On the other hand, the coöperation of the integrated concerns was not to be taken for granted. Membership in B-products cartells might to a certain extent be beneficial if price maintenance were carried out and economies secured in distribution. But it was at least open to question whether or not the limitations to which they would be compelled to submit as members of a cartell would not entail a sacrifice outweighing the benefits. Maintenance of output at a fairly uniform volume was essential to the greatest efficiency of production. If A-products were syndicated a decrease in the demand for these could only be compensated for by increasing the production and sale, perhaps at low prices, of B-products, which quantitatively were not so rigidly restricted. B-products formed a sort of buffer between the fluctuations in the demand for A-products and the disposition of a constant total output. The peculiar fitness of steel bars to perform this function of an outlet, or " Sicherheitsventil " accounts for much of the difficulty experienced in the efforts to bring them under syndicate control.[1]

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[1] Cf. infra, p. 286.

[2] Kartell Rundschau, 1905, pp. 145, 692.

[3] Ibid., p. 692; 1906, p. 204.

The first period of the existence of the steel syndicate seems to have been one of disintegration of B-products combinations. It was found impossible to cartell bar producers. Several of the existing combinations were dissolved during the three years. The light sheet association expired and only a shadow of the former organization took its place as the result of the efforts of the steel combination.[2] The heavy sheet cartell was likewise not reorganized or renewed upon expiration. Only shipbuilding material was placed under syndicate control; a result not due to the steel syndicate but to nationalistic motives and to preferential railway rates granted by Prussian railways. The wire rod syndicate was with great difficulty extended to the middle of 1907; but the wire nail syndicate closely affiliated with it was definitely dissolved and not even a price agreement took its place. Moreover efforts to syndicate wire had borne no result. The extension of the gas pipe and boiler tube combinations took place prior to the definitive organization of the steel syndicate. In general it was found impossible to carry negotiations forward to a successful conclusion before the middle of 1906. The extension of the steel syndicate then became the center of interest; while consideration of the syndication of B-products was postponed.[1]

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[1] Control of the production of steel bars would have added more to the power of the steel syndicate than the control of any other class of B-products. They constituted the chief B-production of syndicate members, amounting to 70 per cent of the total for the Empire (1.5 million tons), the balance being turned out by the independent rolling mills, about twenty in number, and by some sixteen open hearth concerns. Unlike the other B-products, the steel bar branch possessed no cartell in 1904, in spite of the numerous attempts made in previous years. Efforts were resumed after the organisation of the steel syndicate, but the difficulty of forming a firmly organised syndicate caused leaders to turn their attention to loose price agreements. Several of these were made, but the level of prices maintained was not high enough to remove dissatisfaction. Endeavors were abandoned late in 1905 and were not resumed until over a year later in connection with the renewal of the syndicate. Kartell Rundschau, 1904, pp. 300, 492; 1905, pp. 115, 367, 490; Berliner Jahrbücher, 1905, p. 115.

[2] The distinction between light and heavy sheets controlled by the two sheet combinations was an arbitrary one; the division was made at a thickness of 5 mm., all above being classed as heavy.

The underlying cause for the failure to cartell B-products in the period 1904–07 seems to have been the irreconcilable conflict of interests between the integrated works in the steel syndicate and the independent producers, usually smaller rolling mills not possessing the advantages of integration; both of these interests must be included in any combination aiming to control a group of B-products. Added to this was the influence of the extreme prosperity experienced by the iron industry, 1905–07, which rendered combination of less interest to producers; business was good, prices were high, and all firms were working overtime to execute orders.

(3) The third and last means of increasing market control adopted by the steel syndicate was that of securing immunity from foreign competition through agreements with foreign producers. Precise information, with regard to those arrangements in which the steel

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[1] Details on the history of the various subsidiary syndicates for B-products are to be found in the general sources cited for this paper. To follow them here would unduly cumber the discussion.

producers of the United States are presumed to have participated, is much more difficult to secure than that concerning German cartells. However, it is quite certain that an international rail cartell, in the formation of which the German steel syndicate took a leading part, was organized in 1904, and continued to exist for a decade. Austrian, German, English, American and Belgian producers agreed upon limitation of export to various countries and territorial division of the market. Other agreements of the steel syndicate with Belgian and French steel concerns, concerning the division of the market for half-products and for beams, were of less importance.[1]

Surveying the results of the efforts of the steel syndicate to increase its control during the first period of its existence, it must be admitted that they were not attended with startling success. The control in A-products had been slightly increased by the entrance of the Upper Silesian concerns, but neither the Westphalian Steel Works Company nor the open hearth concerns had receded from their positions. Nothing had been accomplished with B-products and conditions were more unfavorable for the speedy inclusion of these than in 1904.

II. The Second Period, 1907–12

The steel syndicate contracts, made in 1904, were to expire in three years from date of organization — so short a period that matters connected with the initial organization had scarcely been settled when the question of renewal came up for consideration. Experience of the members with the operation of the syndicate had been sufficiently satisfactory to incline them toward extension rather than toward a restoration of unrestrained competition. Prices and profits had been good during the major portion of the period. How much of this was due to syndicate influence is problematical; probably the influence of the *hausse* of 1906–07 was underrated by proponents of the combination.

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[1] Kartell Rundschau, 1904, p. 401; 1906, p. 160; 1906, p. 693; Stahl und Eisen, 1913, p. 382.

Nevertheless it was recognized that renewal would be effected only with difficulty and would be dependent upon the satisfactory adjustment of several important matters of controversy. Upon one point only was agreement reached with ease: concerning a change in organization by dropping the Beirat or advisory council, which had been according to the original articles, the most important governing body.[1] Any member or group of members was entitled to name a member of this council for each half million tons of allotment of A-products. There were consequently nine voting members. In addition each member of the cartell could send a representative entitled to take part in the discussions of the council but having no vote. The active interest of members in the transactions of the advisory council brought it about that nearly all the members of the syndicate were represented at its meetings. All demanded power to vote. Thus upon matters which had to be referred to the general meeting of members, there was merely a repetition of the discussion which had been held in advisory council meetings, and usually by the same persons.

More difficult of solution were the problems of readjusting freight bases and accountants' prices.[2] Upon the question of freight bases there was a split between the

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[1] Kartell Rundschau, 1906, p. 570; 1907, p. 383.

[2] The accountants' prices (Rechnungspreise) were the minimum prices paid by the syndicate for A-products purchased. The balance remaining from sales at higher prices was distributed periodically after expenses of the organization had been deducted.

Rhenish-Westphalian and the Saar-Siegerland groups of works, the latter claiming that the bases aready selected by the syndicate were unduly prejudicial to the interests of the South German steel works.[1] They threatened to withdraw from the combination unless the relation were modified. The accountants' prices seem to have been considerably higher, as compared to cost of production, for railroad material and structural steel than for half-finished products. There was consequently an additional inducement for works to neglect the production of half-products for the market and to increase the production of the other two groups of A-products; a development to be regretted in view of the appreciable shortage of half-products which occurred in 1906 and 1907.

To compromise the differences arising out of the preferential treatment enjoyed by certain members of the steel syndicate under the old agreement was a further task for advocates of extension.[2] As an inducement to enter the combination, the Phoenix firm had in 1904 been conceded the privilege of buying its extra requirements of half-products from the syndicate at special prices. Certain South German firms received special prices for their output by virtue of special contract. As was to be expected, these firms insisted upon the retention of their favorable positions. The sentiment of many members of the steel syndicate was in favor of discontinuing all such special contracts and refusing to enter into new ones.

Far more serious and far more difficult to solve were the problems connected with the relations of certain members of the steel syndicate to mercantile firms.[3]

[1] Kartell Rundschau, 1906, pp. 570, 571.

[2] Ibid., 1907, p. 159.

[3] Ibid., 1906, pp 367, 368; 1907, p. 298; Iron Age, 1907, p. 1271. Cf. also British Consular Reports for Germany, 1907, no. 3487, p. 66; 1908, no. 4804, p. 90.

The members of the cartell in general had become more or less dependent upon the organization for the distribution of their output of heavy steel, but individual works to a large extent had got out of touch with their former clientele. Certain works, fully conscious of this, began to affiliate themselves with mercantile firms as a precaution against the possibility of eventual dissolution of the syndicate. At its formation in 1904, three important steel works had been closely connected with wholesale iron-dealing firms, and indeed had in part developed from these firms.[1] Fearing that the activity of the steel syndicate would tend to limit that of the dealers, these three demanded and received a guarantee from the syndicate that their dealers should be allowed to participate in the business at least to the same extent as before the organization of the combination.[2] But all other dealers in structural steel (the chief line handled by the mercantile firms) had been compelled to enter one or other of the Beam Sales Associations, which were strictly controlled by the syndicate and in which the privileges of dealers, with respect to the size of allotments in particular, were considerably less favorable than those conceded to the works dealers (Werkshändler).

During 1906 several other works proceeded to ally themselves with iron dealers; others followed their example in 1907.[3] Then these concerns demanded for the mercantile firms with which they had become connected the same privileges and concessions which had been granted to the three firms in 1904. From the standpoint of the syndicate there were several objections to the grant to more dealers than had been favored already. Such concessions constituted preferential treatment of a certain set of dealers, who received the benefit of lower prices than those fixed by the syndicate for the associations and whose allotments were measured with greater liberality. Further, they were relieved from the control which the steel syndicate could exert over the Beam Sales Associations.[1] General opinion among dealers was naturally against such favoritism to selected firms. And those members of the syndicate not affiliated with mercantile firms felt that they were not as well treated as the others.

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[1] These were the Roehling, de Wendel, and Rombach firms.

[2] Kartell Rundschau, 1907, p. 298.

[3] For a complete list of alliances see ibid., 1907, pp. 300, 385; also Berliner Jahrbücher, 1907, pp. 111, 112.

Most delicate and difficult of all were the problems connected with the measurement of allotments. Nearly all the members desired larger figures of participation upon extension of the combination. Two classes of concerns, however, were especially insistent in their demands: first, those which felt that at the organization of the cartell they had not received allotments as large as their productive capacity entitled them to; second, those which had entered on schemes of expansion, either by large extensions of plant or by means of amalgamation with firms outside the syndicate, and had thus secured or would secure in the near future a considerably increased productive capacity. A part of this expansion was directly traceable to the influence of the steel syndicate itself. Experience had shown that in order to secure larger allotments cogent reasons must be given. The best of all reasons was afforded by a display of large well-equipped manufacturing capacity.

In addition to the problems of size of allotments there was the difficulty of division between A and B-products. During the period 1904–07 there had been a decided shift in the case of many members from the manufacture of heavy A-products to more highly finished B-products. This development rendered the syndicate of less importance to its own members, and gave them at the same time an outlet for surplus production. To reconcile the conflicting demands, some for limitation of B-products, others for the entire removal of restrictions, proved a most trying task.

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[1] Cf. infra., p. 301.

As is so often the case in cartell negotiations there seemed to prevail a sort of fatalistic hope that the combination would be extended eventually, even tho nothing was accomplished before the last day (in this case April 30, 1907). In the course of the protracted negotiations extending from the middle of 1906, after the plan for provisional renewal had been abandoned, now the one problem, now the other seemed to dominate the situation.[1] The less important differences were taken up first and disposed of; attention was then turned to decisive matters. But the necessary assent to extension was secured only two hours before the time limit had expired.[2] At this time the Westphalian Steel Works Company entered.[3]

As extended, the steel syndicate was essentially the same in form as before.[4] The most conspicuous change in organization, the abolition of the advisory council and the assumption of its powers and duties by the general meeting of members, was more nominal than real. Participation in B-products was henceforth to carry the same voting power as A-products, save in matters affecting price fixation for the latter; the purpose of the amended provision being clearly to limit the power of B-producers in fixing the prices for half-products, their chief raw material, to the detriment of producers of A-products.

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[1] Kartell Rundschau, 1906, pp. 312, 313, 367, 569, 570; 1907, pp. 24, 159, 295 et seq.

[2] Ibid., 1907, p. 382; Berliner Jahrbücher, pp. 109 et seq.; Das Handelsmuseum, 1907, p. 246; Der deutsche Oekonomist, 1907, p. 293; Iron Age, 1907, pp. 1578, 1662, 1880; Board of Trade Journal, July 18, 1907; British Consular Reports for Germany, no. 4084, pp. 88, 91.

[3] Kartell Rundschau, 1907, pp. 297 et seq.

[4] Excerpts from the contract which had not been published are reprinted Passow, Materialien des wirtschaftlichen Studiums, vol. i.; cf. also Kartell Rundschau, 1907, p. 382.

It was found impossible to solve the problem of works-dealers without making sweeping concessions.[1] Each member of the steel syndicate was permitted to name a certain dealer or set of dealers, who were to be entitled to claim from the syndicate a portion of the participation of the particular steel concern, not exceeding 25 per cent of the total quota of structural steel. In order to do this the quantities allotted to the various associations of beam dealers had to be cut down to 60 per cent of their former figure.

The controversy over freight bases was adjusted by agreement that accountants' prices were henceforth to apply to freight on board the nearest station. The special treatment of different groups of A-products was abolished. In order to allow for advantages or disadvantages of location, a schedule of charges to be added or deducted from the accountants' prices was computed for each member.[2]

The gradually changing emphasis of production from A-products to B-products was reflected very clearly in the allotment tables issued after the extension of the syndicate. A number of members had begun to stress the production of B-products to such an extent that their allotment of half-products was considerably decreased; they were using their output of half-products more largely in further manufacture.[3] The decrease in the allotment of half-products was therefore not due to any decrease in production on their part but to the growth of integration within the syndicate. The extent to which this development had progressed was well illustrated by the difficulty experienced by the independent rolling mills in securing sufficient half-products as raw material to keep their plants running in 1906 and 1907.

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[1] Berliner Jahrbücher, 1907, p. 115; cf. infra, p. 301.

[2] Kartell Rundschau, 1907, p. 208.

[3] Ibid., 1907, p. 470; allotment tables, pp. 472, 473.

Study of the total allotments by districts also brings to light some interesting changes. The Rhenish-Westphalian iron district retained the first place in the syndicate, but the difference between it and the Lorraine-Luxemburg district diminished. The increase in B-quotas for the latter region, double that of the former, was significant of the growing integration in the southwestern district.[1]

During the second period of its existence, the steel syndicate was a little more successful in increasing its control than during the first. In A-products the competition of outside (open hearth) works became especially annoying when, as a consequence of the low prices prevailing for B-products in the depression following 1907, they proceeded to market their steel production in the shape of half-products, the price of which was being maintained by the steel syndicate at a profitable level.[2] In some cases competition became so serious that the syndicate silenced it by taking over the production of the competing concerns into its own account. The dissolution of the pig iron syndicates also gave the non-integrated producers, especially the open hearth concerns, a supply of raw material at low prices. The situation at one time in 1909 became so critical that there was serious discussion of dissolving the steel syndicate.[3] With the slight improvement in general conditions which set in, the crisis was averted, and the questions involved soon became merged in the series of problems to be settled prior to extension in 1912.

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[1] Kartell Rundschau, pp. 467 et seq.

[2] Ibid., 1909, p. 436.

[3] Ibid., 1909, p. 549; British Consular Reports for Germany, 1909, no. 4325, p. 119.

Efforts to syndicate B-products were resumed after the extension of the steel syndicate in 1907 and continued intermittently throughout the five year period of the second syndicate, but were likewise unsuccessful. The great increases in the allotments of B-products conceded to a number of the large integrated firms rendered the position of the independent rolling mills more insecure than ever; therefore, as was asserted, more inclined to listen to proposals for combination.[1] The need of organization seemed to be emphasized by the drop in B-product prices after 1907. Bar producers finally agreed to a loose price convention lasting from September, 1909, to March, 1911, when secret price cutting led to its discontinuance. Plans for a general sheet cartell were abandoned because of the opposition of certain large concerns while efforts to combine light sheet producers separately had no result. Aided by a heavy demand which favored increased prices, heavy sheet producers secured a price agreement in the fall of 1909 which was extended from time to time. The cartell for shipbuilding steel led a precarious existence but continued to function during the five-year period. The wire rod syndicate, reorganized as the Wire Rolling Mills, A.G., was extended for five years. Banking influence was alleged to be responsible for the renewal for three years of the gas pipe and boiler tube combinations. Nevertheless at their expiration in 1910, the opposition of several important producers, engaged in schemes of expansion, was responsible for failure to extend them again.

International agreements were continued during the second syndicate. The international rail cartell was successful in securing the agreement of Austrian, Hungarian, Russian, and Spanish works, whose competition had become troublesome.[1] Members of the steel syndicate also participated in the international tube cartell dating in definite form from 1908; but the collapse of the German tube and pipe syndicates led to its dissolution in 1910.[2]

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[1] Kartell Rundschau, 1907, p. 555; Berliner Jahrbücher, 1907, p. 115.

Meanwhile the general movement toward increase in the size of the individual concern and toward integration had been gaining momentum. The fever of expansion and concentration within the syndicate was not long checked by the reverse in 1907; in fact, the belief that only a completely integrated concern could weather depression furthered the movement. Among others, the Thyssen and Gelsenkirchen firms announced great plans for expansion. The changes in productive capacity which were bound to follow were accompanied by definite plans to secure largely increased allotments if the steel syndicate should be renewed upon expiration of the existing contracts.

III. THIRD PERIOD. EXTENSION OF THE SYNDICATE, 1912–17

The fundamental objection of the integrated establishments to any combination which would tend to limit their freedom, not allowing them to shift production from one group of products to another, according to market conditions, was much more apparent in 1911 and 1912 than five years earlier. The steel works owners were now divided upon the desirability of syndicating both A and B-products, some holding that both should be fully controlled, others insisting upon retention of the *status quo*. But by far the larger group advocated the entire removal of all restrictions upon B-products.[1] Individual works had become so powerful and were so rapidly increasing their productive capacity that they had little interest in the extension of the steel syndicate unless the figures of participation conceded to them were extremely liberal. With the constant decline in the relative importance of A-products marketed, the syndicate had lost a great deal of its former significance for its members.[2] The absolute amount of half-products handled by the syndicate had decreased in part as a consequence of the amalgamation of independent rolling mills — the most extensive buyers — with producers; in part as an accompaniment of the general increase of integration.[3]

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[1] British Consular Reports for Germany, no. 4084, p. 168; Kartell Rundschau, 1907, pp. 512, 747, 821; 1909, p. 371; 1910, p. 168; 1911, pp. 163, 541, 919; 1912, p. 693; Iron Age, 1907, pp. 156, 1477; Stahl und Eisen, 1913, p. 382.

[2] Kartell Rundschau, 1908, pp. 573, 689; 1910, p. 598; 1912, p. 695. On the international beam cartell, cf. ibid., 1913, pp. 711, 867. Some information upon the half-products agreement between German, French, and Belgian producers is given in Kartell Rundschau, 1908, p. 1078.

Another obstacle to extension was the demand of a large southwestern firm that it be allowed to retain its monopoly of the manufacture of a certain type of broad-flanged beams manufactured by a special process covered by the so-called Grey patents. Certain other concerns obstinately opposed its continuance.[4]

A third difficulty arose out of the unwillingness of the East and South German works, which produced few half-products or none, to participate in the losses due to a declining market or to forced export.[5] The other classes of A-products were the more profitable, as accountants' prices were adjusted; but the profits were distributed equally over the whole A-tonnage. These works therefore advocated the formation of a separate cartell for each class of A-products, or at least some arrangement whereby they assumed no responsibility for half-products. The result would have been to cause the works to demand increased participation in railroad material and structural steel and to restrict the production of half-products for market more than ever.

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[1] Berliner Jahrbücher, 1912, p. 123.

[2] A competent estimate placed the amount of one group of B-products, steel bars, sold in 1911 at 3.6 million tons as compared to the syndicate total allotment of 3.4 million tons for rails and structural steel.

[3] Kartell Rundschau, 1912, pp. 155, 293.

[4] Ibid., 1912, pp. 37, 154, 293; Iron and Coal Trades Review (London), vol. lxxxvi, p. 23.

[5] Kartell Rundschau, 1912, p. 293; Berliner Jahrbücher, 1912, p. 141.

As upon previous occasions, the question of the size of allotments to be assigned to the individual works was the most difficult of all problems connected with extension.[1] The general tendency during the negotiations seems to have been to shift all claims for increased quotas to the B-group, the purpose being to keep the allotment and the output of A-products within such limits that the price maintenance hitherto accomplished by the steel syndicate could be continued; so that in spite of the overproduction of manufacturing equipment during the past few years, profit would be derived from at least a few steel products. Since the actual sales of railroad material and structural steel had never reached the full allotments, increases in allotments conceded to some firms must necessarily be accompanied by decreases in the allotments of others. The older concerns, having for the most part undertaken extensions of plant, could not be expected to surrender any portion of their allotments without a struggle. The race after allotments in B-products promised to endanger the prospects of renewal still more. The enormous increase of capacity can be judged from the fact that the allotment increases asked for amounted to six million tons, or 50 per cent of the total participation of A and B-products at that time.[1] The bulk of this proceeded from a few large concerns. The underlying struggle for supremacy among the various iron districts, between the Rhenish-Westphalian and the Lorraine-Luxemburg, was evident throughout the proceedings, but there was no clearcut division because of the interlocking of interests which had taken place.[2]

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[1] Berliner Jahrbücher, 1912, pp. 122 et seq.; Kartell Rundschau, 1912, p. 293.

Aside from agreement on certain minor questions, little had been accomplished before the last few days proceeding the date when the obligation of the members to sell A-products exclusively through the syndicate expired. Opposing demands had seemed irreconcilable. But in the last session, the majority of works adopted an exceedingly compromising tone, apparently from a sincere desire not to be responsible for the dissolution of the combination. One difficulty after another was disposed of; the Thyssen and other firms agreed upon the wide-flanged beam proposition, and differences with the Upper Silesian works were settled. At the last moment the syndicate was extended for another five-year period.[3] But it had not run the gauntlet of opposing desires and interests unscathed. The limitation upon the production of B-products had been abolished. The organization of the cartell remained the same for A-products, but all provisions relating to the other class were henceforth inoperative. After an existence of eight years even the small beginning which had been made in 1904 toward the syndication of B-products was lost.

Why? Simply because within the cartell another movement toward concentration and combination was taking place, a development having a sounder economic basis than any mere agreement or contract between independent steel producers. And it had been learned that the cartell was in one way restrictive of the full development of integration, altho furthering it by way of reaction. If the steel syndicate was a torso[1] as it formerly existed, it was in the future to be even less than that.[2]

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[1] Such as Gelsenkirchen, Thyssen, and Burbach concerns.

[2] Kartell Jahrbuch, 1911, p. 26; Kartell Rundschau, 1911, p. 882.

[3] Ibid., 1912, pp. 545 et seq.; Stahl und Eisen, 1912, p. 769; Berliner Jahrbücher, 1912, p. 122; Der deutsche Oekonomist, 1912, p. 337; Das Handelsmuseum, 1912, p. 277; Iron Age, 1912, pp. 1168, 1237; Iron and Coal Trades Review (London), vol. lxxxiv, pp. 653, 698, 814; British Consular Reports for Germany, no. 4939, 1912–13, p. 47.

In its emasculated form the syndicate has continued to function since its extension in 1912. The war has aggravated some of the difficulties with which it has to contend, and has given an excuse for postponing action on others. Soon after the outbreak of the war, representatives of the coal, pig iron, and steel syndicates held a joint session with representatives of several organizations of buyers, and satisfactory adjustment of terms of delivery and payment under the altered conditions was brought about.[3] The settlement of the wide-flanged beam controversy, giving the one firm especially fitted for their manufacture a practical monopoly of manufacture, has proved to be but temporary. The patents owned by this firm having expired, other firms have installed machinery for their manufacture and demand allotments. The increased use of concrete for construction has resulted in decreased utilization of steel for structural purposes. The propaganda of the syndicate has not been successful enough to avert the loss of business. Consequently demand for increased allotments presents difficulties. One firm proceeded to manufacture wide-flanged beams and sell them outside, a policy which was upheld by the arbitration court assigned to investigate the legality of the action. As a result of this situation and the general unsettlement of conditions, caused in part by the difficulties experienced in the renewal of the coal syndicate, one of the largest concerns in the steel syndicate, the Deutsch-Luxemburg concern, gave notice in October, 1915, of its intention to withdraw from the combination upon the first of March in the following year, or two months after the war if not ended by that time.[1]

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[1] Walker, in Quarterly Journal of Economics, vol. xx, p. 396.

[2] The situation in Upper Silesia was hardly changed by the extension of the Düsseldorf combination. In October, 1912, the Upper Silesian Steel Works Company was extended for five years with the same membership. Kartell Rundschau, 1912, p. 1028.

[3] Ibid., 1914, p. 726.

The removal of all restrictions upon the production of B-products by members of the steel syndicate was decided discouragement to those who still wished to bring them under cartell control, and was not lessened by the subsequent completion of several immense new plants in the Lorraine-Luxemburg region, built chiefly by Rhenish-Westphalian interests. The situation induced alliance of the smaller establishments with the larger integrated concerns, but these arrangements were not considered sufficient. Consolidation and the formation of communities of interest for long terms of years under strict contracts were chosen by many works in preference. The tube business, after the failure of price agreements, became concentrated in the hands of two groups. One was led by the Mannesmann concern, which had become the most important factor in the tube business because of its largely increased capacity and a series of definite contracts with smaller firms to take charge of the marketing of their production.[2] The other comprised the tube manufacturing members of the steel syndicate, which had organized a temporary joint sales agency. Combination of the two groups was actively urged in 1913 and 1914, but with as little success as the attempts to syndicate bars.[3] The syndicate of wire rod producers — the only B-product cartell remaining after the extension in 1912 — after being twice provisionally renewed, was finally allowed to expire by limitation at the end of 1914.[1] The large burdens assumed to keep mills closed down and the inability of the cartell to secure sufficient business at profitable prices were the immediate causes.

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[1] Kartell Rundschau, 1915, pp. 593 et seq.

[2] Ibid., 1913, pp. 81, 288, 470, 559; 1914, pp. 92, 666.

[3] Berliner Jahrbücher, 1913, p. 153; Kartell Jahrbuch, 1911, p. 241; Kartell Rundschau, 1913, pp. 553 et seq.

Recently the proposals made to bring about the uniform syndication of all B-products have been accorded more attention than those having to do only with a single branch.[2] Long term contracts and protective agreements with the steel syndicate seem to be essential features of the recent schemes. Altho active efforts in this direction were dropped at the opening of the war, the rapidly decreasing margin between the prices of B-products and raw materials caused a revival of agitation, and pending its outcome, led to the formation of several loose price agreements for steel bars, tubes, wire rods and sheets. Early in 1915 discussion turned to the organization of a general association of crude steel manufacturers as a basis for the combination of B-producers.[3] A proposition was finally developed to the effect that a " Deutsche Stahlbund " should be formed, chiefly for the purpose of bringing about the organization of cartells for other products. Steel products were to be classified much as before, each class to be subjected to fixation of price and limitation of output — the whole to form a uniform comprehensive scheme of syndicating the iron industry. About twenty important firms were actively supporting the plan, but a much larger number have exhibited little enthusiasm for it.

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[1] Stahl und Eisen, 1912, pp. 2018, 2104; ibid., 1914, p. 1543; Kartell Rundschau, 1912, pp. 919, 1038; 1913, pp. 30, 564; 1914, pp. 291, 373, 668, 727.

[2] Ibid., 1914, pp. 600 et seq.

[3] Ibid., 1915, pp. 114 et seq., 276 et seq.

Reviewing now the first decade of the operation of the steel syndicate, it becomes evident that its significance for the German iron industry had, contrary to the

GERMAN IRON AND STEEL PRICES, QUARTERLY, 1904–15.
(In marks per ton)

Year	Quarter	Blast furnace coke	Brown minette iron ore	Foundry pig iron no. 1	Steel billets	Steel beams	Steel bars
1904	I	..	..	..	..	..	..
	II	15.00	3.00	66.00	90.00	105.00	112.50
	III	15.00	3.00	66.00	90.00	105.00	110.00
	IV	15.00	3.10	66.00	90.00	105.00	106.50
1905	I	15.00	3.10	66.00	90.00	105.00	108.00
	II	15.00	3.40	66.00	90.00	105.00	108.00
	III	15.00	3.60	66.00	90.00	105.00	108.00
	IV	15.00	3.80	71.00	90.00	105.00	112.00
1906	I	15.00	4.00	78.00	90.00	110.00	120.00
	II	15.50	4.00	78.00	95.00	110.00	122.50
	III	15.50	4.10	78.00	95.00	120.00	134.00
	IV	16.50	4.10	81.00	100.00	120.00	144.75
1907	I	16.50	4.10	81.00	105.00	125.00	147.50
	II	17.50	4.10	..	110.00	125.00	149.00
	III	17.50	3.50	85.00	110.00	125.00	142.50
	IV	17.50	3.00	85.00	110.00	125.00	130.00
1908	I	17.50	3.00	81.00	100.00	115.00	112.50
	II	17.50	3.15	76.00	100.00	115.00	107.50
	III	17.50	3.15	72.00	95.00	115.00	101.25
	IV	17.50	3.40	72.00	95.00	115.00	103.75
1909	I	15.50	3.40	61.50	95.00	110.00	102.50
	II	15.50	3.65	60.00	95.00	110.00	100.50
	III	15.50	3.65	57.00	95.00	110.00	99.00
	IV	14.00	3.90	59.50	95.00	110.00	105.00
1910	I	14.00	3.90	62.00	95.00	110.00	108.50
	II	14.00	3.90	65.00	100.00	110.00	110.00
	III	14.00	3.90	65.00	100.00	110.00	111.00
	IV	15.50	3.90	66.00	100.00	110.00	113.50
1911	I	15.50	3.90	66.00	100.00	110.00	113.50
	II	15.50	3.75	66.00	100.00	110.00	107.50
	III	15.50	3.80	66.00	100.00	110.00	100.50
	IV	15.50	3.90	69.75	100.00	110.00	102.50
1912	I	15.50	..	70.50	100.00	110.00	109.00
	II	16.50	4.25	73.55	100.00	110.00	109.16
	III	16.50	4.38	73.50	105.00	112.50	122.25
	IV	16.50	4.63	77.33	105.00	115.00	124.50
1913	I	16.50	4.87	77.50	105.00	115.00	123.66
	II	17.50	4.80	77.50	105.00	115.00	113.33
	III	17.50	4.40	77.50	100.00	115.00	99.83
	IV	17.50	4.75	77.50	95.00	110.00	97.33
1914	I	..	..	75.50	95.00	..	90.00
	II	..	..	74.50	95.00	..	90.00
	III	..	..	79.50	95.00	..	90.00
	IV	..	..	79.50	102.50	..	110.00
1915	I	..	..	79.50	102.50	..	105–110
	II	..	..	86.50	110.00	..	125.00
	III	..	..	94.00	115.00	..	140.00
	IV	..	..	94.00	115.00	..	..

Statistics of coal and iron prices for 1888–1913, from which the above are taken, may be found in Stahl und Eisen, 1913, p. 232; 1914, p. 264. Prices after 1913 are from Kartell Rundschau, 1915, p. 500.

Billet prices are taken as representative of the prices of half-products. The syndicate has maintained a constant margin between the various shapes and qualities of half-products, billets being ten marks higher than ingots, five marks more than blooms and two and one half less than sheet plates.

Of the above prices, those of coke have been controlled during the period by the coal syndicate, those of pig iron in 1904–08 and since 1911 by the pig iron syndicates, those of steel billets and beams by the steel syndicate.

expectations of its organizers, decreased. The A-products were still handled by the syndicate, but relatively they had lost in importançe during the decade, and even absolutely the increase was small. The control of the syndicate over B-products became practically nil; not one of the several combinations existing in 1904 had survived the ten-year period, and no others had taken their places. Only the extraordinary conditions of war made possible the loose price agreements of 1914. And to add the final page to the record of failure, the syndicate, weakened as it was by 1915, faced the possibility of dissolution at the end of the war.

IV. THE PRICE POLICY OF THE STEEL SYNDICATE

The center of interest in the study of any combination is its influence upon the public and upon consumers, exerted ordinarily, when standardized products are dealt with, in the fixation of market prices. The power of the steel syndicate was limited to class A (heavy steel) manufactures; but controlling about 90 per cent of these, it could fix selling prices, with the assistance of the tariff, within fairly narrow limits.

Comparison of the prices of structural steel and of half-products as quoted by the steel syndicate, may be made first, with previous German prices from 1888 to 1904; secondly, with the course of prices of steel products, e. g., steel bars, not controlled by any syndicate; and lastly, with American and English prices after 1904. Such comparisons give ample evidence of the stability of domestic prices under syndicate control. With regard to the level of prices — whether high or low — conclusion is more difficult. There was a widespread impression that syndicate prices were unreasonably high — higher than they would have been under competitive conditions; a view which was fostered by the broad publicity given to the complaints of half-products users concerning prices of half-products and dumping in foreign countries. It is true that the smaller margin remaining to the independent rolling mills after the steel syndicate had assumed control of raw material prices and low export prices gave some basis for complaint. On the other hand, that syndicate prices were not so high as to be excessively profitable seems to be indicated by the fact that the participation in A-products has increased but slightly during the existence of the syndicate; and the amount of half-products, concerning which most complaint was heard, has decreased. It has been argued that the works found it more profitable to produce non-syndicated products, the prices of which were subject to the full force of market fluctuations. Comparisons with international prices, to all intents and purposes the English prices, are inconclusive. In the absence of exact data which take into account the tonnage sold at each price, one hestitates to make the statement that the steel syndicate has secured more per ton than was obtained by the older combinations or by the works when not in combination. Because of their stability, German prices have at times been higher than prices in other countries; at other times they have been lower. It is certain that the steel syndicate has not abused its power by imposing an extortionate price policy upon the consuming public. It seems to have consistently adhered to its announced policy of pursuing a middle course in price fixation, of not attempting to advance prices in periods of heavy demand except slowly, and of lowering them in periods of depression in the same manner.[1]

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[1] See table of prices appended. The English prices used for comparison were taken from the London Iron and Coal Trades Review, price supplement, January 30, 1914; American prices from Iron Age, January, 1914, and the Statistical Abstract.

Turning to prices secured in the export trade, which constituted from a quarter to a half of its sales, one is confronted by the difficulty of obtaining accurate data.[1] Maximum prices must have been at least as low as English prices. There is much evidence that the export prices of the syndicate were usually lower than domestic prices and at times were lower than the world prices with which they were competing.[2] The complaints as to the price policy of the syndicate have involved in almost every case bitter protests against the low prices to foreigners.

Rather than quote export prices upon the home market, the steel syndicate continued the plan of its predecessors of granting bounties to buyers of half-products upon quantities of articles actually manufactured therefrom and exported. The syndicate replaced the Half-Products Union in the Clearing House for Export which, in 1902, had been organized by the coal, pig iron, and half-products cartells in order to facilitate the payment of bounties.[3] The general prosperity beginning in 1905 with the accompanying increase of international iron prices made it possible for the syndicate first to reduce gradually and finally to discontinue export bounties in the third quarter of 1907. The market reverse and vehement protests of buyers caused their resumption in 1908, and their continuance at varying levels (in total, including coal and pig iron bounties, from 5 to 20 marks per ton) until the opening of the war.[4]

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[1] The Iron and Coal Trades Review, vol. lxxxvii, 1913, p. 545, prints some price statistics which purport to be export prices for German half-products. They are in every case ten to twenty marks lower than the domestic prices quoted by the steel syndicate.

[2] Kontradiktorische Verhandlungen, vol. iv, pp. 358, 360, 419; Morgenroth, W., Exportpolitik der Kartelle, p. 23. On the export policy of the steel syndicate, cf. also Report of the Federal Trade Commission, Coöperation in the Export Trade, Pt. I, pp. 214 et seq.; Pt. II, pp. 14 et seq.

[3] Diepenhorst, F., Ausfuhrunterstutsungen und Ausfuhrpraemien, p. 33; Kartell Rundschau, 1904, p. 373.

[4] Ibid., 1915, p. 118; 1914, p. 663; 1907, p. 775. Bounties were discontinued at the opening of the war but the protest of buyers caused their resumption at a level of ten marks from October, 1914 to March, 1915.

The volume and vehemence of the complaints of buyers as to the price policy of the steel syndicate seem to have varied inversely as the magnitude of the margin between half-finished products and the more highly finished, not controlled by the syndicate. Since the steel syndicate, in accordance with its avowed policy, has consistently avoided following the fluctuations of the market, the margin has increased or diminished with the prices of B-products.[1] In times of depression the margin remaining to the independent rolling mills buying raw material at syndicate prices has become very small or vanished altogether, while in years of prosperity they have been able to make large profits. The main complaints of half-products users, in reality an expression of the conflict of interests between integrated and non-integrated establishments, were three in number. First, prices of half-products were too high as compared to the very low prices of products rolled therefrom; second, half-products were sold to foreign producers at extremely low prices compared to domestic prices; third, export bounties were insufficient to offset these disadvantages and were granted under oppressive conditions (only to those organized in cartells) and were not paid to indirect users of half-products.[2] Taking the evidence as a whole, it seems that dumping was a fairly common practice of the steel syndicate, altho leaders declared that it occurred only in isolated instances.[1] Protests subsided during the prosperity of 1905–07, but the collapse in the latter year and the ensuing low prices for B-products with steady prices for heavy steel caused genuine distress among the independent rolling mills. The slowness of the steel syndicate in lowering prices led to a search for other remedial measures. Agitation was carried on in the Reichstag, enforced by a petition of the Association of Half-Products Users, to abolish the protective tariff upon pig iron, scrap iron, and half-products. Drawbacks were also recommended. The syndicate in its statement to the Reichstag protested against the abolition of the tariff and declared that the combination was not raising but merely stabilizing prices. The controversy was taken up by the press and continued during 1908 with much vigor on both sides, but without any effect upon the tariff situation and with but little concession in prices by the syndicate.[2] Since 1909 there has been a decrease in the volume of complaint, due in part to its apparent futility and in part to the adoption of other remedies, in particular resort to amalgamations and communities of interest with raw material producers.

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[1] Complaints concerning the prices of the other groups of A-products have received little publicity. Due to the restriction of dealers' profits and the veto of high resale prices, it is probable that ultimate consumers were but little affected and were perhaps benefited by the cessation of speculation by dealers. Railroad material was sold chiefly to the state railways in large quantities under long time contracts. The syndicate was criticized in 1907 and 1908 when it closed a three-year contract with the Prussian state railways for requirements at prices in line with the high iron and steel prices prevailing in 1906–07 but out of accord with the reverse which had set in before the transaction was completed.

[2] Denkschrift zur Lage der Reinen Walzwerke, Anlage 3, Kontradiktorische Verhandlungen, vol. iv, p. 479, gives a typical list of complaints.

The general charge against the steel syndicate, running throughout the history of its relations with buyers, is that half-products prices have not been such as to allow finished products manufacturers a reasonably constant return. The costs of conversion into bars from blooms have been variously estimated, a conservative figure being about 25 marks per ton.[1] It is evident from a study of price statistics that upon various occasions, and of late almost constantly, bars have been sold at prices which did not cover raw material costs plus costs of conversion to the non-integrated mills — those which were compelled to buy half-products at syndicate prices. But has the steel syndicate been responsible for this? The influence of the steel syndicate in causing among its members an increased production of the B-products which constituted also the output of the complaining buyers was indirectly a factor which tended to bring down B-prices, thus decreasing the margin. The other means by which the syndicate was usually alleged to be responsible for the low margin was that of raising the prices of A-products. But a study of the course of prices seems to warrant the conclusion that domestic prices as maintained by the combination were not unreasonably high, tho as a result of the very stability aimed at, they could not at times avoid being out of line with world prices. The causes for the steadily recurring and deepening periods of adversity affecting the independent rolling mills are not to be sought in the price policy of a cartell, but in more fundamental economic and technical conditions.

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[1] Like its predecessor, the steel syndicate participated in a series of hearings (1905) in which representatives of independent rolling mills dealers and cartells aired their opinions. Proceedings are printed in Kontradiktorische Verhandlungen über die Stahlwerksverbande am 20. und 21. Juni, 1905, im Reichstagsgebäude zu Berlin. Stenographische Bericht, vol. iv, pp. 227 et seq.

[2] For particulars of the agitation in 1908, see Berliner Jahrbücher, 1908, pp. 132 et seq., 163 et seq.; Summary of Eingabe der reinen Werke an den Staatssekretär des Innern betr, Aufhebung des Einfuhrzolles auf Roheisen, Schrott und Halbzeug, and of the syndicate's reply in Kartell Rundschau, 1908, pp. 619 et seq., 909; British Consular Reports for Germany, no. 4325, 1909, pp. 117 et seq.

V. INFLUENCE OF THE STEEL SYNDICATE UPON THE INDUSTRY

The advantages which commercial enterprises expect to derive from membership in a cartell in return for their sacrifice of independent action are in the last analysis a greater stability and higher level of earnings and profits. The cartell is essentially a device for distributing the output of its members, only affecting the productive process as a means of more effectively carrying out its policies of distribution.[1] The combination can increase earnings of its constituent only by accomplishing this distribution in a more economical and efficient manner than could be done by the firms themselves. In order to be classed as successful, the combination must not have brought about collateral developments which tend or will eventually tend to nullify whatever desirable results it may accomplish.

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[1] Cf. Kontradiktorische Verhandlungen, vol. iv, pp. 350, 389, 481.

It is an extremely difficult matter to prove a statement that the steel syndicate has or has not increased the profitableness of its members. The individual concerns manufacture a variety of products not controlled by the syndicate, the price movement and production of which may neutralize or intensify any influence the syndicate may exert. The dividends paid by the members of the steel syndicate as a rule are higher than those of other firms in the iron industry.[2] But is that due to the fact that they are members of the steel syndicate or to the fact that they are all integrated concerns enjoying the advantages that integration offers? It seems more reasonable to suppose the latter. The price policy of the syndicate appears to have been a moderate one; no huge profits could have been derived from it. The volume of sales has not been greatly increased in the classes of products controlled and disposed of by the combination. Therefore it seems that the large dividends are due rather to the economies of production and the efficient management of the integrated works than to the economies of distribution secured by the syndicate. The formation of the steel syndicate has rendered the employment of several agents for the classes of products controlled by the syndicate unnecessary in the same locality. The cartell has consolidated the agencies in some cities, established new ones in others, carried on a certain amount of propaganda work to encourage the use of steel in construction, and has represented the several works at industrial expositions. But the fact that the syndicate disposed of only a portion of the production of its members, leaving the so-called B-products and other articles to the individual concerns, seems to have rendered at least a part of the saving attributed to the syndicate illusory. Since these works were compelled to maintain a selling organization of their own or to rely upon dealers for the disposal of their products, they did not enjoy the economy of dispensing entirely with sales activity or a sales organization.

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[1] The syndicate contract contained a clause to the effect that simplification and specialisation of production should be striven for. As a means of bringing this about, quotas might be exchanged among members. Actually little was done along this line and the partial utilisation of equipment continued as before. Cf. Kartell Rundschau, 1910, p. 638.

[2] For details and statistics of earnings see Die Schwereisenindustrie im deutschen Zollgebiet, ihre Entwicklung und ihre Arbeiter. Nach vorgenommenen Erhebungen in 1910, bearbeitet und herausgegeben vom Vorstand des deutschen Metallarbeiterverbandes. Stuttgart, 1912, pp. 97–104, also pp. 132, 140–167; Leisse, p. 111.

It cannot be doubted that general opinion of the public and of iron manufacturers was that the steel syndicate had increased the " Rentabilität " of its members. The press generally expresses this opinion. Stock market quotations before, during, and after renewal negotiations, rise and fall with the favorableness or unfavorableness of prospects for the continuance of the syndicate.[1] And yet — even if the general impression was in accord with fact, if the steel syndicate did increase the profitableness of its members, it was at the same time fostering a development which tended eventually to counteract whatever slight effect it may have had in increased earnings — an artificial stimulation given to the expansion of the iron industry.

The actual amount of sales made by the steel syndicate in A-products shows a very moderate increase during the first decade of its operation, if we consider the increase in total steel production in the Empire from 8.9 in 1904 to 18.9 million tons in 1913.[1] This increase is the resultant of increases in the sales and allotments of structural steel and railroad material and a considerable decrease in half-products.[2] The division of sales between domestic and export gives evidence of the success of the syndicate in exploiting the export trade.[3]

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[1] See quotations in Berliner Jahrbücher; also Kartell Rundschau, 1907, p. 462.

The development of B-allotments presents a striking contrast to that of A-products.[4] The allotment of 1911, the last year before syndicate restrictions were removed, was double that of the first year of the syndicate's existence. This great increase, and the decrease of the allotments of half-products, are the most significant

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[1] Stahl und Eisen, 1914, p. 424; Kartell Rundschau, 1913, p. 653.

TOTAL ALLOTMENTS AND TOTAL SALES OF THE STEEL SYNDICATE (A-products)
(In thousands of tons)

Year	Total allotment	Total sales	Percentage of sales
1904–05	4,999	4,995	100.00
1905–06	5,014	5,472	109.13
1906–07	5,847	5,757	98.46
1907–08	6,096	5,427	88.97
1908–09	6,168	4,802	77.85
1909–10	6,183	5,017	81.11
1910–11	6,239	5,338	85.55
1911–12	6,270	5,998	95.66
1912–13	6,383	6,395	100.18

[2] TOTAL ALLOTMENTS UNDER THE STEEL SYNDICATE
(In thousands of tons)

Date	A-products	Half-products	B-products
March 1, 1904	4384.2	1440.5	3088.4
Jan. 1, 1907	6227.4	2019.1	4851.7
May 1, 1907	6054.1	1348.8	5817.5
Jan. 1, 1911	6259.5	1417.9	6176.9
July 1, 1912	6244.2	1327.1	Limitation dropped
July 1, 1913	6395.5	1343.7	

From Kartell Rundschau, 1904, p. 339; 1907, pp. 468 et seq.; 1913, p. 656.

[3] The export business of the syndicate has amounted to about 25 per cent of the total sales of structural steel, about 40 per cent of the railroad material, and in half-products has varied from 18 to 40 per cent of the total.

[4] Statistics of actual sales of B-products are not available, but it is certain that allotments were reached in the period of heavy demand from 1905 to 1907.

features of the development of the syndicate. Both are concomitants of the rapid change in the internal organization of the iron industry brought about by the development of the large integrated establishments. This movement toward integration, conspicuous in all iron districts, was centered in the Rhenish-Westphalian and Lorraine-Luxemburg regions. This seems to be the permanent movement toward concentration in comparison with which the cartell is but a temporary organization, deriving its strength from the enhancement of bargaining power and the influence upon prices which it lends to concerns at a time when they were not willing or not well able to withstand the force of unrestrained competition.

It need not be repeated that the steel industry furnishes the classic example of the advantages of integration. They were fully realized by a number of German concerns and in part by many more. It is of course difficult, if not impossible, to measure accurately the advantage enjoyed by the integrated steel works through a comparison of their costs of production with the costs of non-integrated establishments. The amount varies with each firm and is always more or less conjectural. Estimates vary from six to fifteen marks per ton.[1] The important thing is that they did possess a material advantage, amounting often to over 10 per cent lower costs, especially in heavy products rolled in one heat.

In the history of German combination and integration, the desire of enterprises to control their raw material seems to have been considerably stronger than the desire of producers to utilize their product in the manufacture of more highly finished articles. Integration has usually proceeded downward first, from steel work and blast furnace to the acquisition of coal, coke, and ore supplies. Very rarely has a colliery company engaged in the production of iron and steel.[1] The pressure in the former case was greater. Dependence upon producers for raw materials was much less acceptable than dependence upon the succeeding stage of the productive process for a market, due in no small measure to the fact that coal, coke, and later pig iron have been controlled by cartells. It would be interesting and instructive to trace the development of most of the members of the steel syndicate, e. g., that of the Krupp, Phoenix, and Thyssen concerns; but limitation of space forbids.[2] One must be content with the statement that in the movement all methods have been adopted to make the individual concern larger and more independent; exchange of stock, cash purchase, communities of interest, consolidation, merger, lease, as well as extension of plant and the erection of new plants.[3]

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[1] Heymann, H., Die gemischten Werke im deutschen Grosseisengewerbe, pp. 212 et seq.; Denkschrift zur Lage der Halbzeug kaufenden Werke, in Kontradiktorische Verhandlungen, vol. iv, Anlage 3.

It is to be expected that under any conditions some firms would be ambitious and would desire to engage upon schemes of expansion; but the fact that the largest portion of this expansion has proceeded from members of the steel syndicate suggests that membership in it may have been a factor. The large dividends of member firms and the prevailing opinion of the influence of the syndicate upon the profitableness of steel enterprises rendered it easy to secure capital. Nevertheless it was in another way, as a sort of reaction, that concentration and expansion have been chiefly affected by the syndicate. One will recall the race for allotments in 1904, the liberal measurement of B-quotas at that time, the large increases in 1907, and the dropping of all restrictions in 1912. The steel syndicate was ordinarily not able to dispose of a sufficient amount of steel to cover allotments, in spite of frequent resort to dumping upon foreign markets; and the allotments themselves represented by no means the full capacity of the works. Every firm wished to operate at full capacity, at maximum efficiency; many wished to extend operations. The strict limitation of the amounts of A-products sold to the syndicate, the advisability of fuller utilization of plant than was afforded by allotments, and the necessity of using the resulting surplus in further manufacture, were direct incentives to engage in the production of other than A-products, or at least to have facilities for their manufacture on hand. An additional inducement was offered by the high prices prevailing for B-products in 1906–07, which seemingly rendered it more profitable to market steel in the form of B-products than through the syndicate in the form of A-products.[1] As long as a firm was a member of the steel syndicate, every demand for increased allotments was sure to meet with the opposition of other members whose allotments would be decreased if such demands were granted. Withdrawal from the combination was not a step to be taken hastily; producers therefore waited until expiration before presenting demands, meanwhile making themselves more and more independent of the syndicate, and increasing capacity so as to enforce demands to be made when the time for renewal came.[1]

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[1] The Gelsenkirchen firm furnishes an example of the unusual order of development, from an independent colliery to one of the largest integrated steel concerns.

[2] Upon the more recent developments in concentration see Kartell Rundschau, 1910, p. 637; 1911, pp. 389, 597; 1912, pp. 40, 150, 736; 1913, p. 254. The Berliner Jahrbücher give annual lists of amalgamations and alliances. Historical sketches of the individual concerns may be found in Die Schwereisenindustrie, and in O. Stillich, Eisen und Stahlindustrie.

[3] The existence of family concerns unwilling to lose their identity, and the general public distrust of " Vertrüstung " have undoubtedly impeded the use of consolidation of independent concerns located at successive stages as a method of forming large integrated enterprises. These influences and the economic and technical advantages to be gained by constructing extensions or new plants so located and planned as to give maximum efficiency account for the popularity of the construction and addition of whole new plants as a means of becoming integrated. Consolidation does not *ipso facto* increase the productive capacity of the industry concerned; the addition of new plants and equipment can hardly fail of that result.

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[1] This statement would probably not hold true for a later period, but at the time the factor was important.

The rise of certain members of the syndicate to positions of power and comparative independence, based upon efficiency and control of natural resources, has not been without its influence as an example. Other concerns have felt stimulated or compelled to follow, in order to be better prepared to maintain their independent existence. They cannot rely upon the steel syndicate or other cartells for continued protection against restoration of competitive conditions. And the outcome of the movement toward integration and increase in the size of the business unit seems to have been an increase of manufacturing capacity beyond need. Expansion has become over-expansion. The low prevailing prices for B-products for several years preceding the war; the fruitless attempts to bring about combinations of B-products and the opposition of the large integrated works to limitation of production; the closing down of wire rod mills and the participation of the integrated concerns in the cartell which bore this expense; the fact that the quotas in A-products as well as the sales by the syndicate have never reached capacity; and the construction of new plants, not in response to any demand for increased capacity, but, seemingly in order to increase the strategic position of the owners — all are indicative of an excessive increase which is generally acknowledged.

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[1] In so far as the distress of the independent rolling mills, brought about by the price relation between half-products and finished manufactures, caused them to combine for their own protection with integrated concerns, or to become integrated in some other way, the steel syndicate may be said to have influenced the movement toward integration. But the moderate prices for half-products maintained during periods of heavy demand allowed a wide margin of profit to the independents, thus for a time discouraging integration.

In no section of Germany do the integrated concerns control the entire production of iron and steel. There still exist numerous enterprises carrying on at only one stage of the productive process, manufacturing a single product or at the most a few classes of products. There are pure colliery companies, blast furnaces, and various types of independent rolling mills. Between these concerns which are not integrated and the concerns which are, conflict has been inevitable. It subsides in times of prosperity only to burst forth with greater fierceness during each succeeding period of depression. There are a number of phases of this conflict; for it is evident that a completely integrated concern has interests which may clash with those of some set of producers at every stage in the productive process. The particular phase which is of greatest interest in a study of the steel syndicate is that between syndicate members as manufacturers of lighter steel (B-products) and the independent rolling mills also manufacturing them but buying raw material from the syndicate. Advocates of the syndicate claimed that its organization would lessen the conflict, but the result seems to have been the contrary. Little was done to modify its price policy so as to aid the independent rolling mills. As certain of the latter allied themselves with integrated concerns, collective resistance became less possible for the remaining. More important in increasing the acuteness of the conflict was the indirect influence of the syndicate in increasing the capacity of its members to turn out the classes of products which constituted the chief output of the independent mills.

What will be the outcome of this struggle for existence upon the part of the independent rolling mills ? Rolling mill owners assert that it is not the technical superiority of the integrated concerns which have caused their distress, but the destructive price policy of the steel syndicate. Further it is alleged that the independent mills possess advantages of their own, in more intensive and painstaking labor, more efficient supervision, and higher quality of product. But one can hardly accept this in its entirety. It is probable that for the finer products, the non-integrated mills may be able to hold out longer than in the manufacture of heavier products, but it seems that it is only a question of time until the competition of rolling mills ceases to be a factor upon the iron market.

Several remedies for the situation have been proposed, all involving combination in some form. One solution, which amounts to an elimination of the problem, is the conversion of the independent rolling mills into actual or virtual integrated concerns, either by fusion with other enterprises, or alliances, or by engaging in the production of their own raw materials. The employment of the community of interest arrangement has become increasingly common during the past few years and seems to be in most cases preliminary to actual merger. This remedy is drastic and often extremely distasteful to independent entrepreneurs and to family enterprises which wish to retain their identity.

Other less radical proposals have been considered from time to time. The proposition that the state furnish funds for the erection of a large modern steel plant for the purpose of supplying the independent rolling mills with raw material, broached in 1904, seems to have been accorded more attention in 1908 and 1909. But it never had much prospect of being carried into execution. Lateral combination, cartells among the rolling mills, have also been suggested. But combinations of bar, wire rod, sheet, and pipe producers, when they have included the independent mills, have not enjoyed a continuous existence and have never been conspicuously successful. The proposal that the rolling mills as buyers unite in a combination to present a solid front to half-products manufacturers was adopted in the Association of Half-Products Users; the result was a flat failure.[1] A cartell of independent rolling mills cannot hope to impose a satisfactory scale of prices upon producers as independent as are the members of the steel syndicate.[2]

VI. THE STEEL SYNDICATE AND MIDDLEMEN

Of the three groups of products controlled by the syndicate, only structural steel was of any importance to the iron trade. Railroad material was usually sold in large quantities, especially to the railroad directories of the various German states. Even before the formation of the syndicate, the steel works had been accustomed to bid for and execute orders without the interposition of middlemen. A large part of the half-products was handled in the same way. Consequently when the syndicate assumed control of these groups of A-products it proceeded to sell as before. In structural steel, especially beams, wholesale and retail iron dealers played a more prominent part. The variety of dimensions, the large number of small purchasers as compared to other A-products, and the large territory over which the demand is spread, had brought it about that the beam business was transacted through wholesale dealers who in turn supplied the local jobber, the retailer, or large consumer.

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[1] The Kartell Rundschau referring to the resuscitation of the Association of Half-Products Users in 1908 says "as usual it is a union out of which the manager has benefitted most." 1908, p. 732.

[2] The abolition of the tariff as a remedy for the situation of the independent rolling mills is taken up in the section upon price policy.

The beam cartell of older days had used its influence to bring about organizations of dealers which came into intimate relations with the producers' combination and whose policy was largely directed by it. Consequently there were at the time of the organization of the steel syndicate four associations varying in form from a loose price and terms agreement to a firmly constituted cartell with a sales-agency stock company.[1] To each of these was assigned a definite territory.

Altho there was some fear that the new steel syndicate would attempt the elimination of the wholesale trade when it replaced the beam combination in 1904, the system of distribution through dealers' associations was considered worth retaining, and the syndicate accordingly proceeded to organize dealers along the same lines. Territory was assigned to the four groups as before, while a special arrangement was made between the syndicate and a number of individual firms exploiting the Upper Silesian territory.[2] Any German wholesale dealer in beams who had earlier purchased his requirements from the beam cartell and who in the three years prior to 1904 had bought at least 3000 tons annually was entitled to membership in one of the beam dealers' associations.[3] Such dealers were supplied directly by the syndicate, a privilege not extended to smaller dealers, who were thus made dependent upon the larger wholesalers. The entrance of new members into the associations for the three years for which the contracts were to remain in force was expressly forbidden, the effect being to protect existing dealers against new com-

[1] These were the Beam Sales Office of Berlin organised earlier, the Rhenish-Westphalian, the Northwest and Middle German, and the South German Beam Sales Associations. For particulars cf. Denkschrift, pp. 67, 68, 477 et seq.; Kartell Rundschau, 1904, p. 545.

[2] For the exact territory covered by each association cf. ibid., 1904, p. 546; Denkschrift, pp. 472, 474. Also Liefmann in Kartell Rundschau, 1906, p. 495.

[3] Bonikowsky, Industrielle Kartelle und der Handel, p. 232.

petition at least with syndicate products. With the exception of the right reserved to supply a few large consumers using from 3 to 6 per cent of the total, the steel syndicate agreed to market all its structural steel through the dealers' associations.[1] As a means of combating outside competition, the cartell required all dealers to purchase exclusively from it, under penalty of a surcharge of five marks per ton on all purchases from the syndicate if outsiders were also patronized. The recognized district associations coöperated with the steel syndicate in fixing the prices and terms to be prescribed by the member dealers.[2]

Aided by groupings in various cities,[3] these associations have continued to function, tho not without changes in organization, usually in the direction of greater firmness. Their existence has at times been threatened by outsiders dealing in steel procured elsewhere than from the syndicate. And to grant the concessions to the "works dealers"[4] in 1907, the steel syndicate was compelled to order a 40 per cent reduction in the allotments of structural steel to the beam associations, an action which almost precipitated a crisis. The dissolution of all the associations was averted only with great difficulty.[5] During 1911, it was reported that members were cutting prices secretly in order to swell sales for that year, in order to enlarge the basis for the measurement of allotments in connection with the extension of the steel syndicate in 1912. The extension of the associations in the same year was clearly due to the pressure exerted by the producers' organization.

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[1] A few firms purchasing less than 3000 tons formerly supplied directly by the beam syndicate, continued to purchase directly from the steel syndicate, tho granted a somewhat smaller discount than the regular members of the associations. Bonikowsky, p. 233; Leisse, p. 145.

[2] The three main territorial groups of dealers united in 1905 to form a federation at the meetings of which prices and terms were determined. Kartell Rundschau, 1906, p. 495.

[3] Denkschrift, p. 68; Leisse, p. 144.

[4] See above, p. 270.

[5] Berliner Jahrbücher, 1907, pp. 112 et seq.; 1908, p. 131; 1909, p. 164; Kartell Rundschau, 1907, pp. 637, 781; 1908, pp. 741, 639; 1909, p. 58.

The steel syndicate has also attempted to control the wholesale trade in German steel in foreign countries. The wholesale dealers of Sweden, Holland, and Switzerland were organized upon the same plan as the German. In other countries, agencies in the form of stock companies were established. Representation in England was secured by the exercise of considerable pressure in the organization of a stock company, the Steel Works Union, Limited, composed of the former agents of individual German steel concerns. In some countries, selected firms were made representatives.[1]

The general influence of the steel syndicate has been to restrict greatly the freedom of middlemen. It has limited the number of dealers allowed to make direct purchases from the syndicate. It has exerted a deciding influence in the fixation of selling prices, as well as prescribing the buying prices of dealers. The volume of each dealer's sales is limited to his share of the allotment granted to the association. Dealers are required to buy exclusively from the syndicate under penalty of surchange and boycott — a serious restriction when syndicate prices happen to be considerably higher than prices quoted by outside producers. Speculative activity of dealers has been limited by the refusal of the syndicate to enter into long time contracts at fixed prices; and indeed its price policy tends to deprive speculation of its chief support, fluctuation.

On the other hand, the assignment of exclusive territory and the agreement of the syndicate to market structural steel exclusively through the associations with the protection thereby afforded against the rise of new competitors, might be considered advantageous to dealers. The equality of treatment secured by membership in associations seems to have been nullified by the concessions granted to works dealers. It was asserted also that the policy of the syndicate in fixing buying and resale prices assured dealers of a profit whereas loss might result if dealers competed among themselves.

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[1] Bonikowsky, pp. 211, 234–36; Kartell Rundschau, 1904, pp. 706, 747.

Thus it appears that the steel syndicate has not found it advisable to attempt the policy which many cartells have adopted — the elimination of the middleman.[1] Public opinion has undoubtedly played some part in deciding this attitude of the combination. But other factors, such as the intimate connection of certain members of the steel combination with wholesale iron firms, the fact that wholesale dealers have in some instances expanded their activities and become producers as well, and the tendency of the wholesale trade to invest capital in steel enterprises, thereby securing an influence in the determination of cartell policy — all these have been more potent in influencing the combination in favor of retaining the existing methods of distribution. And the allegation that products can be marketed at less cost through dealers than by means of a cartell organization, seems to have had some basis in fact.

VII. Conclusion

If one considers merely its price policy the steel syndicate might still be classed as a " good " combination.[2] Manufacturing buyers of half-products have at times been affected by a level of prices higher than the international level, but at other times have benefited by the moderation of syndicate policy. The difficulties of the independent rolling mills seem to be due more directly to the increased production of B-products by competing plants under conditions making for a degree of efficiency and low costs which the non-integrated mills could not attain. The endeavors of the syndicate to control the distribution of heavy products and to organize the trade were as a whole not harmful, and may have resulted in some protection to buyers. With labor and labor conditions the cartell presumably had nothing to do, their regulation being left to the individual concerns.

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[1] Cf. Schaltenbrand's assertions in Kontradiktorische Verhandlungen, vol. iv, p. 419.

[2] Walker writing in 1906 so classes the Steel Works Union. Quarterly Journal of Economics, vol. xx, p. 398.

Against the favorable, or not-unfavorable, effects of syndicate operation must be placed the results of the artificial stimulation given both directly and by way of reaction to the over-expansion of the iron and steel industry. By its magnitude and its unsoundness this development was sufficient to nullify any economies which may have been realized by the cartell. It is probable that the movement toward integration would have taken place more slowly had the iron industry been free from syndicate influence. As in the case of the potash industry,[1] there are reasons for being extremely doubtful whether the industry was in as good condition at the opening of the war as it would have been had competition prevailed.

There is no reason to believe that the excessive capacity of the German iron industry which existed in 1914 was deliberately planned. Nevertheless it must have been of immense value to Germany in the conduct of the war. The fact that some of the new plants erected by members of the steel syndicate are located in the Lorraine-Luxemburg iron ore region, very close to the French border, was an additional reason for Germany's contesting every foot of the attempted advance of the Allies, which if successful would involve the loss to

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[1] Cf. my article in this Journal, vol. xxviii, p. 190.

Germany of strategically located munitions plants of most modern type.

Had the war not intervened, it is probable that a halt would have been called, perhaps through an economic crisis, to the extension of capacity beyond needs. The syndicate contract is due to expire during this year (1917); whether it will be extended is doubtful. The fact that one important member has already given notice of intended withdrawal may indicate dissolution and restoration of competition in A-products, followed eventually, when the war is over, by the deferred economic readjustment. On the other hand decision as to extension may be postponed until after the war, when in altered form it may be given new life and vigor as a means of rehabilitating foreign trade. Because of the interests of many members in Lorraine-Luxemburg iron and steel properties, the future of the syndicate, if extended, will be intimately connected with the disposition of territory in the peace settlement. But whatever happens in the way of economic readjustment after the war cannot be ascribed wholly to expansion due to war demands; it is to be ascribed to prior over-expansion.

The steel syndicate as the largest combination of steel producers in Germany, our strongest competitor upon the international steel market, possesses special interest for the United States at a time when extension of foreign trade is so actively encouraged. In both Germany and America the present combinations have succeeded a series of looser, unsatisfactory agreements, the futility of which had been amply demonstrated. The Sherman law left no step between resort to illegal secret agreements and the holding corporation or full consolidation. In Germany, on the other hand, the law has been favorable to a type of combination which, tho falling far short of actual merger, insures unity of action for a term of years by means of legally enforceable contracts. In spite of the different forms and legal status of combination, the development of the steel industry in both countries has in one respect shown similarity. Within the German syndicate there has been from the outset constant rivalry between the members, reflected especially in connection with the demands for allotments. In the struggle to maintain their position in the syndicate and their existence in case of its collapse, they have in every possible way increased their size and strength. The result has been the concentration of a growing proportion of the iron and steel industry in the hands of a relatively few concerns, no one of which is of overwhelming size and power as compared to the others. In the United States, it seemed at one time that the organization of the Steel Corporation would introduce a concern of such power as eventually to permit competitors to exist only by its sufferance. But the subsequent rise of competitiors and the gradual decrease in the market control of the trust are bringing about, with respect to concentration, a situation not a little resembling that in Germany. It remains to be seen whether, in the development of a number of competing concerns, each large enough to secure maximum economy and efficiency of production, and marketing but not controlling a sufficient proportion of the output to prevent the free play of competition, some definitive solution of the trust problem is being approached.

H. R. Tosdal.

TOTAL UTILITY AND CONSUMERS' SURPLUS UNDER VARYING CONDITIONS OF THE DISTRIBUTION OF INCOME

In discussions of the principle of consumers' surplus as developed by Marshall, the preliminary assumption has been that the diminishing utility curve might be represented by the demand curve and that marginal utility might be measured by price. This assumption is satisfactory for an individual, and may also be applied to a group of persons whose psychologic reactions to successive increments of all commodities are the same, provided that they have equal purchasing power. But in the case of a community whose members differ widely with respect to money income, the demand curve and the price no longer even approximately represent conditions of utility. The utility to the first purchaser, a millionaire, may be low, while the utility to the marginal purchaser, a worker in a sweat-shop, may be very high. The millionaire takes the first unit not because its utility to him is higher than to the worker but because the sacrifice involved in purchasing it is very much less.[1]

So much is familiar. The following analysis is an attempt to adapt the concepts of total utility and consumers' surplus to a community with unequal incomes — a community such as we find in the actual world.

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[1] The above principle is recognised by Professor Marshall. "A pound's worth of satisfaction to an ordinary poor man is a much greater thing than a pound's worth of satisfaction for an ordinary rich man," (Principles of Economics, 6th ed., p. 130). He thinks, however, that this consideration may be disregarded in practice, because "it happens that by far the greater number of the events with which economics deals affect in about equal proportions all the different classes of society; so that if the money measures of the happiness caused by two events are equal, there is not in general any very great difference between the amounts of the happiness in the two cases." This is undoubtedly true with reference to the events which Professor Marshall had in mind. If, however, the event in question were a socialistic proposal looking to the redistribution of income or even a drastic minimum wage law, this principle, far from being negligible, becomes the determining factor for justifying the innovation.

First, assume a group made up of four persons (A, B, C, D) having the same money incomes, and further assume them to be alike in their utility reaction to successive increments of some commodity, say, oranges. As successive oranges are offered, each yields a diminishing utility. For brevity suppose that we denote a unit of psychic satisfaction derived from an orange by u. Then the satisfaction derived from the first orange may be assumed to be $5u$; from the second, $4u$; from the third, $3u$; from the fourth, $2u$; from the fifth, u. Satiety is reached with the sixth orange — the orange becomes a free good.

Now so long as incomes are equal, utilities may be measured by money payments. The measures of $5u$, $4u$, $3u$, then become 5 cents, 4 cents, 3 cents, and so on.

If a dealer puts four oranges on the market, each person will take one orange at 5 cents; if he puts eight oranges on the market, each will take two at 4 cents; if twelve, three at 3 cents; and so on. Under the hypothesis, as so far advanced, diminishing utility and demand are both represented by the double line, PX, in Figure 1.

Throughout this discussion, A, B, C, and D are assumed to be aggressive purchasers in the order of the alphabet. That is, if only one orange were put on the market, it will go to A at 5 cents. B, C, and D would also give 5 cents, and not one of the purchasers would give more than 5 cents. But A gets the orange. In like manner, if two oranges are offered, they go to A and B; if three, to A, B, and C.

Next, let us suppose the incomes of the members of our community to be redistributed so that for A, B, C, and D respectively they will stand in the ratio of 4: 3: 2: 1. Since the amount of money in the community and hence the total money income is not changed, their money incomes will now be (assuming that before the change each income was x) $1.6x$, $1.2x$, $0.8x$, and $0.4x$. Now, under these conditions, as was noted in the first paragraph, utility curves can no longer be constructed and compared on the basis of the money pay-

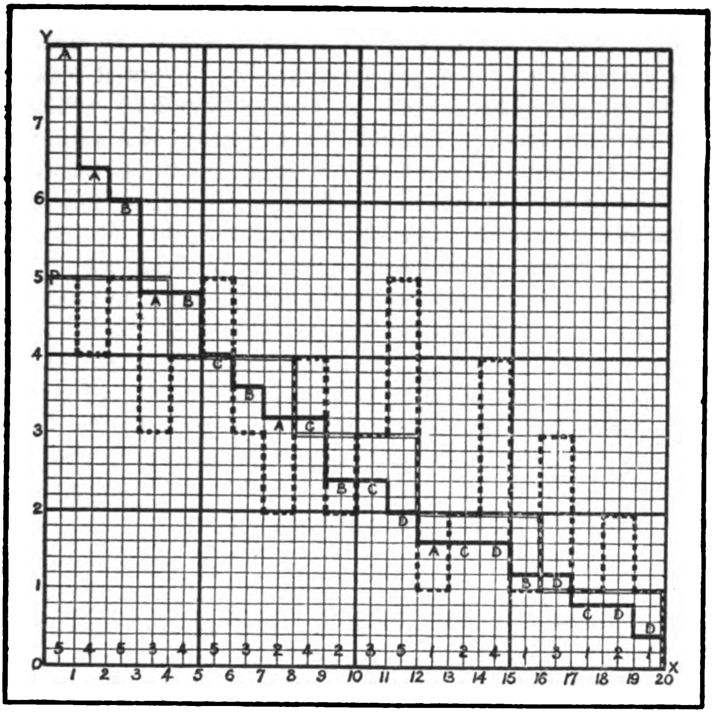

FIG. 1

Explanation:

═══ Demand or utility line, equal distribution of incomes.
▬▬▬ Demand line, unequal distribution of incomes.
········ Utility line, unequal distribution of incomes.
Figures below line OX indicate supply.
Figures above line OX indicate corresponding utility of last unit taken, unequal distribution of incomes.
Letters A, B, C, D, indicate recipients of successive increments of supply, unequal distribution of incomes.

ments which would be given for successive increments of the commodity in question. A curve constructed on this basis will indeed be a *demand* curve, but not a *utility* curve. In order to make a comparison for utility between persons of different money incomes on the basis of their demand curves, some hypothesis is necessary for reducing money payment to utility.

The hypothesis which will be assumed in the following analysis is that the utility of any of the successive increments of a commodity to the purchaser may be measured by the fractional part of his entire money income which he is willing to sacrifice in order to obtain it. For example, if A's income is twice B's, and if B would pay x cents for a thing, then the fact that A would pay $2x$ cents for the same thing indicates that the utility of the thing is the same to both.

On this basis, a demand schedule may be made out for A, B, C, and D, separately and collectively, under their changed incomes. Since, when their incomes were equal, each would pay 5 cents for the first orange, now, when A's income is 1.6 times what it was before, he will pay 1.6 × 5 cents, or 8 cents. This method of computation may be applied to the first, second, third, fourth, and fifth orange for each of the buyers under their changed incomes. The result of the computation is shown in the following demand schedule.

TABLE I

At	A takes	B takes	C takes	D takes	Group takes
8	1	..	..	..	1
6.4	2	..	..	..	2
6	2	1	..	..	3
4.8	3	2	..	..	5
4	3	2	1	..	6
3.6	3	3	1	..	7
3.2	4	3	2	..	9
2.4	4	4	3	..	11
2	4	4	3	1	12
1.6	5	4	4	2	15
1.2	5	5	4	3	17
.8	5	5	5	4	19
.4	5	5	5	5	20
cents	oranges	oranges	oranges	oranges	oranges

The demand "curve" for the group (derived from this schedule) is shown by the full-line steps (YX) in Figure 1.

Now if by consumers' surplus we mean nothing more than the money which the members of a community would have paid in excess of what they actually do pay, for a given supply of a commodity, offered in successive increments, rather than go without it, then from a study of the above schedule and Figure 1 it at once becomes apparent that in this sense consumers' surplus is in general greater under conditions of unequal than of equal distribution of incomes, until the supply reaches satiety, when the two results will be the same. The last part of this statement is obvious, *a priori;* for at satiety the sum actually paid is 0 while the sum which would have been spent is the same in each case.[1]

The following table gives the consumers' surplus computed as above under different conditions of supply.

TABLE II

Oranges offered	Consumers' Surplus Equal distribution	Consumers' Surplus Unequal distribution
1	0	0
2	0	1.6
3	0	2.4
4	0	6.0
5	4	6.0
6	4	10.0
7	4	12.4
8	4	15.2
9	12	15.2
10	12	22.4
11	12	22.4
12	12	26.8
13	24	31.6
14	24	31.6
15	24	31.6
16	24	37.6
17	40	37.6
18	40	44.4
19	40	44.4
20	40	52.0
21 (Satiety)	60	60.0

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[1] Under equal distribution A or B or C or D would each have spent 5 + 4 + 3 + 2 + 1 cents or 15 cents rather than go without the oranges. In all 60 cents. Under unequal distribution the amounts which would have been spent by each is shown by the following table.

A = 1.6 (5 + 4 + 3 + 2 + 1)
B = 1.2 (")
C = .8 (")
D = .4 (")
A + B + C + D = 4.0 (") = 60 cents.

But such an analysis of consumers' surplus is without significance. Consumers' surplus, as a constituent of psychic income, is to be defined as "the difference between the sum which measures total utility and that which measures total exchange value."[1] But when persons have different incomes, sums of money expended or which might have been expended no longer measure either marginal or total utility. Before they can do so they must be reduced to terms of equal income. When A, in the supposed case of unequal income buys his first orange for 8 cents he is obtaining a utility of 5*u* and is making a money sacrifice (in terms of any other commodity he might have purchased) also of 5*u*. In like manner the second orange at 6.4 cents represents a utility of 4*u* and a money sacrifice of 4*u*. If only two oranges are offered, A gets them both at a money sacrifice equivalent to 4*u* each or 8*u* for both. Rather than go without them he would have made a money sacrifice equivalent to 9*u*. He thus gains what may be called a "real" consumers' surplus of 1*u*. Now if incomes had been equal and only two oranges had been offered, A and B would each have obtained an orange for 5 cents and each would have represented a utility of 5*u*. Since by hypothesis neither would have paid more than 5 cents there would have been no consumers' surplus. It thus appears that "real" consumers' surplus, as above interpreted, may also be greater under inequality of income. It would be possible to determine the consumers' surplus in this sense for every increment of supply from two oranges to twenty-one. It may be worth while to note that in this sense also the consumers' surplus when satiety is reached will be the same for any distribution of income. But except for this comparatively unimportant deduction the investigation would be of little worth. At any rate it has no significance in comparing the well-being of a community having unequal distribution of wealth with one having equal distribution. For the consumers' surplus of those who purchase goods because of larger means rather than because of greater marginal utility is to some extent offset by a consumers' deficit

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[1] Taussig, Principles of Economics, vol. i, p. 128.

(so to speak) on the part of those who are unable to purchase at all, because of insufficient means, even tho the goods have high utility.

To compare the well-being of the two communities the method of consumers' surplus is therefore inapplicable. Yet the method outlined above may be employed to compare them with respect to total utility as successive instalments of goods are offered; and this comparison will be significant. Using the same assumptions as in the case of "real" consumers' surplus we derive the following table.

TABLE III

Oranges offered	Total Utility Equal distribution					Total Utility Unequal distribution				
	A	B	C	D	Group	A	B	C	D	Group
1	5	..	..	..	5	5	..	..	..	5
2	5	5	..	..	10	9	..	..	..	9
3	5	5	5	..	15	9	5	..	..	14
5	9	5	5	5	24	12	9	..	..	21
6	9	9	5	5	28	12	9	5	..	26
7	9	9	9	5	32	12	12	5	..	29
9	12	9	9	9	39	14	12	9	..	35
11	12	12	12	9	45	14	14	12	..	40
12	12	12	12	12	48	14	14	12	5	45
15	14	14	14	12	54	15	14	14	9	52
17	15	14	14	14	57	15	15	14	12	56
19	15	15	15	14	59	15	15	15	14	59
20	15	15	15	15	60	15	15	15	15	60

Comparing the total utilities for the group it appears that for every condition of supply of over one orange or less than nineteen the total utility enjoyed by the group is less under conditions of unequal distribution of incomes than under equal distribution. The comparison of total utilities under the two conditions of distribution may also be made directly from the diagrams, Figure 1, Figure 2, the total utility for equal distribution being the area below the double line PX,

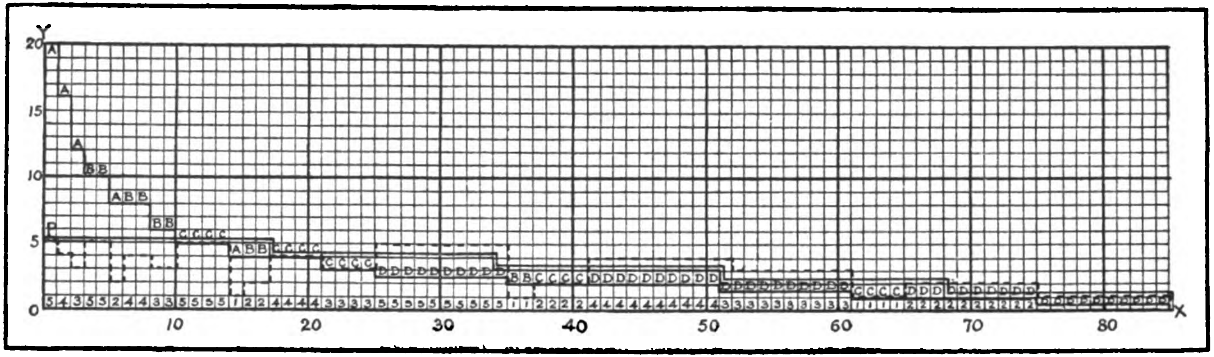

Fig. 2

Explanation:

═══ Demand or utility line, equal distribution of incomes.

▬▬▬ Demand line, unequal distribution of incomes.

.... Utility line, unequal distribution of incomes.

Figures below line OX indicate supply.

Figures above line OX indicate corresponding utility of last unit taken, unequal distribution of incomes.

Letters A, B, C, D, indicate recipients of successive increments of supply, unequal distribution of incomes.

and extending to the ordinate corresponding with the supply; and the total utility for unequal distribution being the area, to the same ordinate, below the dotted line, PX.

The utility "curves" corresponding with Table III are shown in Figure I, the double line, PX, indicating utility when incomes are equal; the dotted line, PX, when incomes are unequal. The ups and downs of the latter line clearly show that under conditions of unequal distribution of incomes the taking of successive "doses" of a commodity no longer indicate a steadily diminishing utility to the purchaser. The twelfth orange, for example, has for its purchaser a much higher utility than the tenth has for its purchaser.

This method may also be employed to compare the well-being of a community under equal distribution of income with that of the same community divided into non-competing groups having different incomes for the members of different groups. Assume a society made up of four non-competing groups, A, B, C, and D, with one person in group A, two persons in group B, four in group C, and ten in group D—seventeen in all, and assume individual incomes for the members of the groups to be in the ratio A: B: C: D = 8: 4: 2: 1. Assume the utility of oranges to members of all the groups to be as in the first problem. Then under conditions of equal income seventeen oranges would be taken at 5 cents, thirty-four at 4 cents, and so on, as shown by the double line, PX, in Figure 2. If under equal distribution each person has an income of x cents, then when the incomes are redistributed in the assumed proportions, each person in group A will have $4x$ cents; in group B, $2x$ cents; in group C, x cents; and in group D, $\frac{1}{2}x$ cents. From this we may construct the demand schedule on p. 316.

The last column of this demand schedule is represented by the full line steps YX, in Figure 2, the letters A, B, C, D, indicating the recipients of successive oranges. If, now, we multiply each money payment of A by $\frac{1}{4}$, of B by $\frac{1}{2}$, of C by 1, and of D by 2, we can construct the utility "curve" shown by the dotted line, PX. As in the former case it will be noted that under conditions of unequal incomes marginal

TABLE IV

At	Each A takes	Each B takes	All B's take	Each C takes	All C's take	Each D takes	All D's take	Whole Community takes
20	1	..	..	..	..	..	..	1
16	2	..	..	..	..	..	..	2
12	3	..	..	..	..	..	..	3
10	3	1	2	..	..	..	..	5
8	4	2	4	..	..	..	..	8
6	4	3	6	..	..	..	..	10
5	4	3	6	1	4	..	..	14
4	5	4	8	2	8	..	..	21
3	5	4	8	3	12	..	..	25
2½	5	4	8	3	12	1	10	35
2	5	5	10	4	16	2	20	51
1½	5	5	10	4	16	3	30	61
1	5	5	10	5	20	4	40	75
½	5	5	10	5	20	5	50	85
cts.	Oranges							

utility may increase as well as diminish with successive increments of supply. The total utility is shown by the area below the double line, PX, when incomes are equal; or below the dotted line, PX, when incomes are unequal. Computations of these areas yield the schedule on p. 317.

As before it will be noticed that between one orange and satiety the total utility is in general greater for equal than for unequal distribution of incomes.

We have assumed that the same kind of goods (oranges) are consumed whether incomes are equal or unequal. This would probably not be true in life. When incomes are unequal, altho A would give 20 cents for his first orange rather than go without it, he would probably prefer to give 20 cents for something having a higher utility than an orange (say a grape fruit) which was before inaccessible but now becomes accessible because of his greater purchasing power. In like manner each D, if the price of an orange were beyond his purchasing power, would probably take something of less utility, but

TABLE V

Oranges offered	Total Utility	
	Equal distribution	Unequal distribution
1	5	5
2	10	9
3	15	12
5	25	22
8	40	32
10	50	38
14	70	58
21	101	79
25	117	91
35	156	141
51	204	191
61	224	221
75	245	245
85	255	255

cheaper (say, an apple). Inequality of incomes, therefore, leads to the production of types of goods, covering a greater range of expensiveness than equality of incomes.

Again, the objection may be made to the above method of analysis that as a person spent his money its marginal utility would increase and that therefore it would be inaccurate to multiply the utility of successive oranges by a *constant* derived from the marginal utility of money, to find what a person would spend. This is a matter of psychology. The objection would be valid if we consider each person as starting with an unreplenishable fund which he is steadily depleting. If, however, we consider the money as an income received in instalments contemporaneously with the spending the objection would be covered. In the case of incomes received by the week or month the matter is largely one of individual psychology. To some persons the utility of a dollar seems about the same during the entire interval between successive instalments of income. To others undoubtedly a dollar seems much more precious towards the end of the month than immediately after pay day.

Considerations such as these must undoubtedly preclude the hope of attaining mathematical precision in applying our analysis to real life. Indeed, such precision cannot be expected from any analysis of so ideal and personal a thing as psychic income. The mathematical method, however, is often valuable in helping us to perceive and grasp a truth even where its results are not to be taken too literally; and no more is hoped for it in the present instance.

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REVIEW

THE CARNEGIE HISTORIES OF COMMERCE AND OF MANUFACTURES[1]

STUDENTS of American economic history have awaited with eagerness the publication of the investigations made under the auspices of the Carnegie Institution of Washington into our past economic life. It was thirteen years ago that the plans for the eleven, later twelve, " divisional " studies were laid. Men qualified for the tasks were then chosen to supervise the formulation of these studies, and work was begun in 1904. But, as Professor Farnam writes in the introductory note to the volumes on commerce, " work of this kind is slow at best, and the completion of divisional volumes has been retarded in many cases, not only by the demands made upon the collaborators to undertake other responsibilities, but also by special mishaps." The first study to be issued of these " Contributions to American Economic History," as the series is to be called, was the *History of Domestic and Foreign Commerce of the United States* (1915), in two volumes, some seven hundred pages in all, prepared under the guidance of Professor Emory R. Johnson. This has been followed (1916) by an instalment of about the same bulk, altho published in a single volume, on the *History of American Manufactures*, written wholly by Dr. Victor S. Clark and covering the period 1607 to 1860. Such studies, attempting to carry further than ever before a systematic investigation of our commercial and industrial history, and sustained by the resources of the Carnegie Institution, deserve the closest attention of all economic students. Future numbers in the series should be scrutinized no less carefully. The contributions represent the endeavor, under the best auspices, to present American economic history in its principal aspects.

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[1] E. R. Johnson and collaborators, History of Domestic and Foreign Commerce of the United States, vols. i and ii, Washington, Carnegie Institution of Washington, 1915, 2 vols., pp. 363, 398. Victor S. Clark, History of Manufactures in the United States, 1607–1860, Washington, Carnegie Institution of Washington, 1916, pp. 675, (with an Introductory Note by Henry W. Farnam).

The *History of Domestic and Foreign Commerce of the United States*, to which Professor Johnson's name is attached, is avowedly the work, not of that scholar alone, but of others as well. He states in the preface that when undertaking the task in 1904 he had intended to write the whole. He found it impossible, however, to carry out this plan, and secured the assistance of Drs. T. W. Van Metre and G. G. Huebner, of the University of Pennsylvania, and of Dr. D. S. Hanchett, formerly connected with that institution. The division of work among these collaborators is roughly as follows: Professor Johnson himself wrote the earlier chapters, dealing primarily with the colonial period; Dr. Van Metre covered the parts on internal commerce, coastwise trade, and on the fisheries; Dr. (now Professor) Huebner was author of the part on foreign trade since 1789; and Dr. Hanchett was author of the final section, concerned with government aid and commercial policy. Volume I contains the parts on colonial commerce, internal commerce, and coastwise trade; and Volume II, those on foreign trade since 1879, the fisheries during the same period, and government aid and commercial policy. A glance at these titles, or better a brief inspection of the chapter headings, discloses the wide scope of the work.

Still wider appears the scope upon perusal. Matters as diverse as the commercial companies that sent out the first colonists and the present organization of the consular service, the development of the oyster culture and the expanding basis of our export trade — all find place. The purpose seems to have been to give as comprehensive and serviceable an account as possible. The commercial aspects of the colonial era have, indeed, been studied before, and have hitherto had in fact more than their share of attention; but our external or domestic trade, our fisheries, governmental assistance and commercial policy, have never had the extended treatment here given. Monographic or briefer studies (Day, McFarland, Tower, and others) may well for some purposes be superseded. It is these formulations upon the main divisions of our commercial history that give the work its greatest value. They should be of considerable utility to the general reader, and may perhaps serve in some measure as divisional ground-plans for the more stable structure which sometime must be built. The adequacy of these plans will later be taken into account.

True, some distinct contributions are made. On certain matters information hitherto not readily available or digested is put within reach. In the study of the fisheries, Dr. Van Metre has passed the bounds of McFarland's book in some respects. He considers not merely the fisheries of the New England coast and northward, but also those of the southern, Gulf, and Pacific coasts and fishing grounds. He brings into correlation with the earlier narrative such recent material as the Census Report on Fisheries of 1908. The discussion of the Alaskan seal fisheries also contains much that is new, and the chapter on fisheries as an international question gives a good summary of the arbitration proceedings both in relation to the North Atlantic coast fisheries and the fur seals. On the whole, so far as original contribution is concerned, this section is the best in the two volumes. Comparing favorably with it, however, is the concluding part on government aid and commercial policy, written by Dr. Hanchett. The treatment of the recent history of the consular service is good, and the portions on the improvement of rivers and harbors, while general and sketchy, hold some new material. In the remaining fields, the formulation of the rather brief history of the coastwise trade is done with most originality. The analysis of the laws protecting and regulating coastwise shipping and the superficial analysis of intersectional exchange are better than what has before been brought together.

In making a just estimate of the volumes, however, it is necessary, I believe, to consider more than the contents as they stand. One should bear in mind the ideals of scholarly work. One should take into account, further, the circumstances under which the volumes were prepared and the period over which that preparation extended. Aid was given in their elaboration by the Carnegie Institution; and they are supposedly the fruition of some ten years' prolonged, if interrupted, labor. Judged merely on the basis of scholarly method, the volumes would fare none too well. Judged by the more adequate standard of scholarly method in conjunction with the other circumstances, they must be rated as falling far short of full measure.

Throughout the volumes, there is a tendency to use readily available material, often secondary sources. Some of the latter (and of these the use is acknowledged) might indeed be legitimately utilized, since they were, to some extent, assisted in their composition by the Carnegie Institution itself. In point of fact, they are used freely: such as Professor Giesecke's little book on *American Commercial Legislation before 1789*, Dr. Tower's *History of the Whale Fisheries*, Professor J. R. Smith's *Organization of Ocean Commerce* and his *Ocean Carrier*, and Dr. C. L. Jones's *Consular Service of the United States* (1907). But these works had been already given to the public, and their utilization meant merely restatements of greater or less extent. Other works whose use is acknowledged, and which may have been assisted by the Institution, are unpublished. These include an " elaborate" and as yet unpublished account of the foreign trade of the United States, prepared by Professors S. S. and G. G. Huebner; a history of the coastwise trade, by Professor Thomas Conway; and a history of the fisheries of the United States outside of New England, written by Dr. W. S. Tower in 1906 and 1907 (i. e., before the publication of such valuable material as the Census Report on Fisheries of 1908). In other portions of the work, the bulk of the information seems to have been drawn from sources which, if not secondary, are at least readily available and require no real research. For example, McFarland's *New England Fisheries* and DuBois's *Suppression of the Slave Trade* form the basis of chapters or parts of chapters, while among sources readily at hand should be mentioned Pitkin and Seybert, Census and other governmental publications of a statistical character, and the series of reports on various phases of domestic trade which appeared in the *Monthly Summary of Commerce and Finance* in 1899–1901. Taken as a whole, the work suffers from a lack of independent research and constructive interpretation. It will be noted that the contributions spoken of above are in the main concerned with secondary matters, the fisheries and governmental activity. Our first interest is, of course, in the histories of the foreign and domestic trades. In these, if we except the compilation of readily available statistics, and especially if we exclude the partial offerings on the coastwise trade, little new is to be found. In general, the work is of the sort which an investigator or compiler working alone and unaided might have put together, not such as to exhibit fruition of some ten years' subsidized endeavor. Where the " going " appears easy or the way has been marked out, there the exposition proceeds apace; where original investigation is necessary, there it halts. This is not the type of product anticipated from the great undertaking, and so is disappointing.[1]

The work as a whole suffers also from the very method of its composition. All collaboration is difficult; but in this case the gains from collaboration hardly outweigh the evils. It will suffice to suggest a few points. The subject matter is divided longitudinally, as it were; one reads the entire history of the internal trade since 1789, and then retraces the years for a view of the foreign commerce. At the beginning, it is true, an attempt is made at cross-section work, at division by chronological periods, when two chapters, one on the fisheries and one on the coastwise traffic of that period, are included in the part on colonial commerce. But, for the period after 1789, this plan is abandoned. Some attempts are then made to tie together interdependent sections of the work; but they are either incompletely done or necessitate much repetition. Thus, the economic development of the United States since the Civil War is dealt with in the part on internal trade, receiving little or no attention in the part on foreign trade. A conspicuous example of repetition appears in the treatment of governmental activity as regard commercial treaties and aids to shipping. Chapter 30, written by Professor Huebner, on commercial treaties of the United States, deals primarily with general and special trade agreements, but also with shipping and navigation treaties; chapter 39, by Dr. Hanchett, on the policy of the United States towards shipping and ship-building, has, of course, also to include reciprocity agreements as well as other governmental assistance; and the final chapter, entitled Tariff Provisions Concerning the Shipping and Foreign Trade of the United States and written by Professor Huebner, contains largely repetitious material both on trade treaties and shipping agreements. Indeed, there seems to be little more justification for the insertion of this last chapter, instead of distributing such new points as are in it to their proper place than that it enables Professor Huebner to reprint (with certain additions to bring it to date, but to a large extent verbatim) an article published in the Annals of the American Academy for May, 1907.

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[1] In marked contrast to the methods employed in this history are those used by Professor Isaac Lippincott in his recent monograph called the Internal Trade of the United States, 1700–1860, published in the Washington University Studies. The title is, in fact, misleading. It is a history of commerce in the Mississippi valley. The monograph is excellent. It is thoro and represents scholarly research; it is well documented; and it makes real contributions, especially in tracing the rise of trade centers. It is to be hoped that Professor Lippincott, having extended his researches from his earlier special studies (one of which, The History of Manufactures in the Ohio Valley up to 1860, he wrote with the assistance of the Carnegie Institution) to this fairly broad thesis, will be able to advance further until we have a really thoregoing history of our domestic commerce.

Again, when repetition becomes necessary on account of the plan of the work, varying interpretations occur. For example: Professor Johnson, in discussing English colonial policy, writes (vol. i, p. 49), "The laws for the restriction of the manufacture of woolen goods, hats, and iron products, were successful, but the effects could scarcely have been important. The colonists could not have made woolens in competition with England either for export to Europe or for the intercolonial trade; nor would the manufactures of hats, if unrestricted, have had much development." Dr. Van Metre, however, in giving reasons for the small growth of coastwise traffic in the same period, ascribes it in part to the prohibitions on manufactures (vol. i, p. 169): " Boston would unquestionably have been the center of a considerable coastwise trade in domestic woolens, had it not been for the repressive policy of England. The hat-making industry of the northern colonies was also restricted, and as a consequence there was little trade in colonial manufactures." In another case, Professor Huebner and Dr. Van Metre are in disagreement. The one (vol. ii, p. 40), stresses the poor transportation facilities, as " a powerful obstacle to the ready movement of imports and exports " during the period 1815 to 1830; while the other emphasizes improvements in transportation in that period (vol. i, pp. 213, 220) and adduces the small increase of imports during the decade of the twenties as evidence of the commencement of " a tremendous expansion of domestic trade " (p. 222). Discrepancies of this kind would not have as much weight, were there countervailing gains from the collaboration. Such, however, are not observable. There is no gain in intensity of investigation or in interpretative insight.

Matters of internal arrangement call for attention. It is open to question, for example, whether the account of the fisheries might not better have formed a separate monograph, even tho still included in this " divisional " treatise and prepared under Professor Johnson's supervision. Except in the colonial era — where a special chapter on the subject is incorporated in that part of the work and some comment is made on the West Indies trade — the history of the fisheries is nowhere linked either with internal or foreign commerce. No doubt, it fits as well into the study of commerce as into any other of the divisional groups: but the attempt to incorporate it as an integral part of a study of commerce seems a mistake. The authors, too, seem to have realized its anomalous position. In general, everything regarding government assistance to this industry, international agreements concerning it, and internal trade in its products, is kept distinct from the discussions of these subjects in relation to commerce as a whole. Everything in regard to fisheries, except for the colonial period, is placed in the part devoted to American fisheries since 1789. Had the authors carried their views to the logical conclusion, they would have relegated this part, with the chapter on the colonial period, to the close of the second volume, and changed the title of the whole to a " History of the Domestic and Foreign Commerce and of the Fisheries of the United States."

On the other hand, cleavage is in another relation carried too far. The " coastwise " and the " internal " commerce are in reality but branches of the " domestic " trade, and of course should not be separated into individual parts. No good reason can be found for such division. In fact, the author of both sections, Dr. Van Metre, found it impossible at times to keep the two wholly within the compartments where they were placed. Note, for example, the domestic movement of cotton (vol. i, pp. 247, 251, 281).

Certain other cases of objectionable arrangement, tho of less importance, should be mentioned: the chronological division of our commercial history, foreign and domestic, at the year 1900; the separation of the chapter on commercial treaties from the part on government aid and commercial policy; and the insertion of appendices and bibliography on the colonial period, not only in the middle of a volume, but between chapters of a part.[1] Of these, of course, the first is most important. Undoubtedly, something may be said for the year 1900 as a dividing point, especially in view of the material at hand in the reports of internal trade, which appeared in the *Monthly Summary of Commerce and Finance*, as above-mentioned. Yet the choice of 1900 is not strongly defended in the work itself. Of the internal commerce, it is said (vol. i, p. 318): " The general character of the internal commerce of the United States during the opening decade of the twentieth century showed but little change;" and of the foreign trade (vol. ii, p. 86) while there has been an " extraordinary growth," . . . " the conditions existing during the closing years of the nineteenth century foreshadowed many of the changes which have since occurred." The year 1890 would seem on the whole more significant. The changes which then began in the character of our exports and imports, the initiation of governmental regulation, both of transportation and combination, and the reconstruction of our manufactures under the stress of combined depression and first low tariff after the Civil War — these all point to the earlier date.

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[1] It might be further asked, what is the map on the Panama Canal routes doing alone and neglected ? It is inserted (vol. ii, opposite p. 120) and is not referred to in the text, which deals with tramp and line traffic.

Disproportionate assignment of space sometimes occurs. A conspicuous case is to be found in the chapter on the trade with our non-contiguous possessions, which receives a share of attention based on a popular rather than a scientific consideration of its importance. How much space would have been granted it, had these countries not happened to belong to the United States ? It occupies in fact nearly as many pages as the discussion of our foreign trade from 1860 to 1900; while the foreign iron and steel trade during this period receives less space than the trade of the last fifteen years with Porto Rico.

Finally, omissions and inadequacies bulk large. There is an almost entire lack of study into the qualities in commerce, that is, into the kinds and grades of commodities appearing in trade movements. As a result, silk goods and glassware are treated as if at least as homogeneous as wheat or coal, and no adequate attempt is made to explain the import and export of the same group commodity — say, cotton fabrics. Again, no sufficient mention is made of the technique of fishing, such as the improvements of vessels and of fishing equipment. Comparatively little notice is given to the competition of various ports in more recent times, with the problems of differentials and port facilities; altho for the earlier period the relation between competitive coastal cities and the development of transportation facilities is pointed out. More serious than any of these, is the omission of any sufficient treatment of marketing. Altho the chapters denominated the Organization of Commerce, as regards both domestic and foreign trade, contain much that is important to the study of commerce, such as the development of communication and transportation, banking and marine insurance, they ignore, for the most part, subjects that are equally pertinent, such as the rise and changes in collective and distributive centers, the growth of standardization, and especially the formulation of our present sales structure. The whole subject of marketing methods, with the exception of produce exchange and foreign export operations, is dismissed with the easy phrase, that " it will be unnecessary to discuss " these matters (vol. i, p. 300).

In sum, it may well be questioned whether the advantages and contributions of the work will enable it to survive the damaging influence of its defects. Tho it may be the fullest account of our commercial history that we have, yet its value is diminished by the indifferent, and in places even poor, quality of its composition, and by the considerable gaps in the outline. The presentation of certain new material is no doubt of importance; but the general character of the volumes, with their inadequate documentation and their great reliance on secondary and readily available sources, lowers the total worth. Especially are they disappointing as the outcome of a decade of preparation combined with the assistance of the Carnegie Institution. They would seem to represent the labor of perhaps a year or so, not of ten years. Indeed, there are unmistakable evidences, in parts, of hasty composition, particularly in relation to the English colonial policy. Thus, it is said, (vol. i, p. 86) that indigo was never " enumerated " during the colonial period. Nor does Professor Johnson always give the same interpretation of this policy. He writes in one place (vol. i, p. 107) that " it is well . . . to remember that the purpose of the mother country was to foster as well as to regulate and tax the commerce of the colonies; " but in a few pages (p. 123), he falls into the old fallacy that " the Revolution was caused primarily by the mercantile policy by means of which Great Britain sought to monopolize the trade of her colonies for the benefit of the people at home."

The value of the work as a " contribution " to American economic history must be set down as doubtful. It does not come up to the ideals of scholarship. Little analytical or constructive acumen is manifested. The best that can be done is, perhaps, to cull from it the additions which it does make to our stock of information, for the first-rate history of our domestic and foreign commerce which is yet to be written.

The *History of Manufactures in the United States* from 1607 to 1860, written by Dr. Victor S. Clark, is in most respects different from the work already reviewed. Outwardly and inwardly the two are dissimilar. They differ in externals: Dr. Clark's book would have made two volumes of moderate thickness after the fashion of the *History of Commerce*, yet is published in a single ponderous volume of somewhat larger page. One wonders if all the studies in the series are to vary. As regards contents, the advantage is all with Dr. Clark. Whereas the collaborators of the volumes on commerce were content with easily obtainable material and with a broad, general account, he has been satisfied in the main with primary sources only and has undertaken a closer, much more detailed discussion. The thoroness, the documentation, the carefully organized and coherent presentation of his subject all suggest the time and energy which have been put into the book and demonstrate the scholarship that directed its composition.

The *History of Manufactures* manifests distinctly the gains from single authorship. The material is dexterously made to fit into its proper place for the fulfilment of the author's purpose. The history is divided into but two main sections, the chronological periods 1607–1790 and 1790–1860. Within these main sections are arranged cross-section chapters, covering natural resources, foreign influences, and similar major sub-divisions. Under this method of organization, the industries of the country sweep forward in a body, and the vicissitudes of the individual members are merged into the onward movement of the whole. It is not a compilation of the histories of individual industries, but a narration of the gradual, steady advance of American manufacturing enterprise. And this exposition is accomplished with a clarity and firmness of cohesion which only exceptional collaboration could have given.

Thoroness of treatment is evident in all phases of the work. The main cross-sections include not only examination of natural resources and foreign influences, but also discussion of the influence of the tariff, the growth of transportation facilities, assistance from all forms of government, organization of industry, and technical progress, as well as the more usual accounts of the extent and the geographical distribution of manufactures. Particularly gratifying is the appearance of the chapters on technical progress and industrial organization. So too, not only are the more familiar manufactures dealt with, but also the somewhat neglected industries, such as flour-milling and distilling, silverware and agricultural implements, machine tools and steam engines Special notice, finally, should be given to the bibliographical richness of the volume. All published monographs and more general studies, the letters and writings of prominent men, the archives of colonial and state governments, the treasures of the British Museum, local histories, and even the papers and account books of individual firms (it is unfortunate that Dr. Clark did not learn of the wonderful collection of the Slater records, now loaned to the Harvard Library) — are all consulted and their evidence woven into the texture of the story. Instructive appendices contain tables of prices for such products as pig iron, flour, and satinets, and an excellent bibliography of available sources.

A further point of contrast between this volume and those on Commerce is to be found in the interpretation of the assembled facts. Dr. Clark's lines of attack and his conclusion are often novel and usually suggestive. Besides his treatment of industrial organization, which will be discussed shortly, I have chosen for illustration a few other points. His discussion of the English colonial policy, in contrast to Professor Johnson's, is clear-cut, coherent, and judicial. In keeping with it, his conclusions are sound: that "upon the whole the industrial development of the colonies was about where it would have been had their economic policies been governed by their own people. Natural influences were vastly more important than political policies in determining that development" (p. 30). Again, Dr. Clark has followed an interesting and important line of inquiry, when he traces the sources of the capital which was invested in early manufactures. The accumulations of mechanics and of the owners of small shops and mills, he finds, were used for the up-building of larger establishments. Commerce furnished another source even more considerable. But his final factor is of most interest: he writes that "industrial capital, however, has been its own chief progenitor. The high profits normally enjoyed by manufacturers supplied a surplus for new enterprises and created confidence in their success" (p. 369). The author's treatment of technical advance is likewise noteworthy. While at times he seems tempted to exaggerate the importance of American inventions, on the whole he gives foreign influence and advantage their due. His further point is novel: while, "as a matter of history," British industrial technique was for a half century "constantly so far ahead of that of the United States that our manufactures always were in the position of learners from the older country," yet "no feature of this apprenticeship . . . was more characteristic than the originality" of the latter. "This was no period of mere passive borrowing and painstaking imitation of the achievements of maturer industrial countries. Foreign inventions were assimilated as readily as foreign populations, and were speedily transformed into the machinery of a truly native system of production" (p. 262). Finally, his consideration of the tariff is gratifying. He holds no brief either for protection or free trade. He seems to attach more importance to the psychological influence of the tariff and to its influence on market stability than to any other feature of its effects. One could hardly differ from his conclusion: "The total effect of protection was to encourage manufactures; some early outgrew the benefits of this influence; others continued to be sustained solely by its support; others were more hampered than aided by the complex of conditions with which this legislation surrounded their operations" (p. 312).

Such a study, with its orderliness, its thoroness, and its stimulating interpretation is what economists had expected from the Carnegie Institution and from the investigators chosen to represent it. It covers a greater multitude of sources than a single, unaided student could well consult; and it does the work under thoughtful organization and with considerable imaginative insight.

Some particulars, however, seem to call for comment. First, it may be remarked that a certain antiquarianism is observable in the treatment of the colonial period, to which considerably over a third of the volume is devoted. A chapter, unlike any other in the book, is inserted containing a review of contemporary accounts of colonial manufactures. More important is the exaggerated emphasis placed upon manufacturing developments before the Revolution, and for that matter before the Embargo and the War of 1812. Dr. Clark's formulated conclusions as regards the colonial manufactures are conservative enough, as far as they go. He takes a position midway between the extremists, the disdainful loyalists and exuberant patriots whom he quotes, maintaining that the country was essentially self-sufficient by the time of the Revolution. This is unquestionably true; but he neglects to point out with proper force that, barring a few exceptions, it was a self-sufficiency based not upon centralized production and exchange but upon family or strictly local production. Reading the book, one feels that the commercial side of colonial manufacturing, the fortuitous or ephemeral entrance of manufactures into trade, and the emergence of short-lived establishments are "played up" too much. The true picture is given elsewhere by Dr. Clark himself, when he is speaking of the beginning of the next stage of development (p. 235);—and what he says there would of course be even more true of the colonial times. Despite some improvement in water transportation, " land communication was still expensive and difficult. Power-using manufactures were dispersed among a multitude of village water mills, thus proving their continued dependence on adjacent materials and markets. The self-subsisting farm household remained the typical economic unit of rural America; and homespun[1] industries still supplied a large part of the nation's consumption."

Second, the division of the history of our manufactures at the year 1790, may be brought into question. No doubt, something may be said for Dr. Clark's position, but there are, I believe, objections. During the period from the adoption of the Constitution to the Embargo and War of 1812, the face of the nation was still turned toward the sea, interested primarily in the hazardous but profitable carrying trade of those troubled times, and neglecting for the most part internal development. Indeed, Dr. Clark himself admits (p. 235) that "in a very real sense the close of this period (1789–1815), rather than its beginning, marks the foundation of our manufacturing independence." Despite the advent of Slater and the Scholfields and despite other similar signs of coming change, it would seem more accurate and satisfactory to place the real commencement of our industrial activity in the period of the Embargo and War. The preceding period would then be relegated to a subordinate place as a time of preparation, when a sufficient mechanical equipment was being introduced and spread through the country, and when capital was making its first timid experiments with manufacturing enterprise.

Another disputable point arises in connection with Dr. Clark's discussion of the tariff, which on the whole is so sound. It is his conclusion that the development of large-scale production was "one cause (and it seems, an important cause) for the political decline of protection between 1833 and 1860."[2] As he writes (p. 281): "the centralization of manufactures in large plants and within limited areas terminated the intimacy that existed between the early manufacturing movement and the common people. Large corporations were no more urgent for protection than smaller enterprises. But they represented to the public a new, strange and unwelcome power in the business world, and long before modern trusts were known they were regarded as the embodiment of monopoly, with all its attendant evils." The author's evidence, so far as it has yet been adduced, consists of two or three expressions from southern speakers or memorials, one from Philadelphia (where, as he later points out, peculiar conditions of small-scale production prevailed), and the analogy of the opposition to the Second United States Bank in the early thirties. The last is, of course, the only valid point. The same phenomenon, however, can be found at the time of the repeal of the First Bank's charter; and still we have the mounting protection of 1816–28. Indeed, as regards the only real downward step in the tariff from 1811 to 1846, namely, that of 1833, Dr. Clark admits that " this sentiment (as above expressed) was subordinate to political expedience." Thus it was at least thirty-five years after the first notable emergence of the hatred of monopoly before the force was really effective. By 1846, moreover, large-scale establishments were of considerably long standing. On the other hand, adequate explanation of that change is to be found in the public and Congressional preoccupation with the controversies arising immediately from the Mexican War and with the complex which included those controversies, the momentous slavery question. On the whole, if Dr. Clark's theory be valid (and to prove it, more evidence must be brought forward), it is a negligible factor in the interpretation of tariff changes.

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[1] The term "homespun industries" is unfortunately used to cover all household manufactures. See p. 335 below.

[2] This thesis also plays an important part in the article by Dr. Clark on "The Influence of Manufactures upon Political Sentiment in the United States from 1820 to 1860," published in the American Historical Review for October, 1916.

Fourth, certain omissions are noteworthy. The development of marketing facilities and organization is, as I have said above, a matter of importance which should have been included mainly in the work on commerce. It is, however, closely bound with a history of manufactures also, and yet does not in this volume find adequate notice. As is the case with other points in the book, somewhat more treatment is given here than in the *History of Commerce*. For example, the subject of auction sales, a form of distribution which caused early manufacturers and protectionists much anxiety, receives brief consideration (pp. 241–42 and 358–59). But the development of marketing methods as a whole falls between two stools, finding place neither in commercial or in industrial history. Much remains to be said concerning the development of the " orthodox " distributive organization, when, how, and why it arose, and much concerning its relation to early manufacturing enterprise. Inadequate also, as in the case of the *History of Commerce*, is the qualitative study of home manufacture and foreign importations. Something, to be sure, is here said of the character of the domestic products and occasionally something of the qualities of the goods imported. But the attention given these points is insufficient and the relation between the two is not satisfactorily emphasized. It is especially necessary, for example, in dealing with the competition of both with household production to understand clearly what each had to offer.

Finally, attention may be called to Dr. Clark's discussion of the organization of industry. That he has made it an important part of his history, co-equal with tariff changes and the volume of production, is indeed a step forward from the ordinary treatment. Yet certain exceptions must be taken to his exposition, both as regards the unusual terms employed and the concepts involved. He finds that there have been five distinguishable types of industrial organization in the United States. These he denominates severally homespun, household, workshop-craft, mill, and factory. They did not always follow one another in sequence, for to some extent, " all stages of industrial development were contemporaneous in America " (p. 443). Yet, on the whole, as his discussion shows, there was an evolution from the homespun to the factory form of production.

Some of these types are familiar concepts under new labels. For example, the " homespun " stage, defined (p. 438) as " manufacturing in the family for home use," is recognizable as what we usually call the " household " form. On the whole, moreover, the latter term remains preferable, since Dr. Clark is perforce led to include within his " homespun " products, not only the various textile fabrics, but also hardware, furniture, shoes, tools and implements (p. 92). Second, the author's " household " stage is easily identified with an old friend: " as soon as such articles (as the above) entered neighborhood exchange," either as " domestic-commercial " or " foreign-commercial," their production was under another industrial form, the " household " industry, which is defined (p. 438) as " manufacturing in the family for outside markets." This, of course, is our old friend, the " domestic system." When Dr. Clark comes to analyze this stage more closely, he finds two different forms of organization, tho both with the technical similarity of complete fabrication within the home — namely, the manufacture for sale through the medium of the country store and the putting-out system, or the working-up of goods for a merchant manufacturer who furnishes the raw material and sells the finished product. This would rule out the term " putting-out system." But why he should have thrown over the phrase " domestic system " in favor of a term which has been heretofore applied to an entirely different form of organization, is inexplicable — especially when the former is wholly adequate and has the added value which comes from established usage. The third form of production, the " workshop-craft," or the " workshop," differs in no way from the familiar " handicraft " system. In fact, the new term is less comprehensive. It does not include the itinerant artisan, who was of considerable prominence in colonial days and disappeared but slowly. He is mentioned by Dr. Clark, yet is ignored in choosing the group name. On the whole, one cannot perceive in these cases a betterment of our accepted nomenclature, while for the many readers who are familiar with the older names and may not carefully identify the various forms in this analysis, some confusion is liable to result.[1]

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[1] It should be noted in passing that Dr. Clark's emphasis or preoccupation is with the structural change in industrial form, which he does not always link with the growth of the market. As a consequence, he sometimes implies a growth of technical equipment over and above the needs of the latter. Thus (p. 443) " productive capacity (of the handicraft shop) rose until it exceeded the requirements of work made to order, and even oversupplied local mercantile demand; " and afterwards there " followed an inevitable development of either the technical or the mercantile side of the shop's

Most interest attaches, however, to the insertion of the "mill" stage, or the "mill and furnace" industries. What distinguishes this form from the other types of organization? Is it in reality a separate stage in industrial development? No exact and thoro definition is attempted; but in two places the author gives some explanation. Thus (p. 164) he suggests its relation to the preceding stages: the term "mill and furnace industries," he writes, "may be applied loosely to all forms of manufacture not carried on in the household or at the work-bench." Of these industries, one class, including distilling, cloth-dyeing, and tanning, "depended for perfection upon carefully observed processes rather than upon manual skill or machinery." In another group, "skill was the main element, tho combined with some use of power machinery, as in paper-making and cloth-finishing," while occasionally "power, processes, and skill were combined, as in iron-making." But, if this is the distinction between the "mill" and the preceding forms, what is left to contrast it with the factory? Upon this point Dr. Clark touches most clearly in speaking of the textile industries (p. 447): "It is impossible to define precisely at what point the textile mill became a factory. Yet it is obvious that little spinning-shops of a few hundred spindles did not belong to the same class of industrial organizations as those of Waltham and Lowell. The question is not one of specialization, for sometimes minute establishments were as fully specialized as larger ones; nor is it a question of ownership, for important factories have belonged to individuals; nor of completeness of process, for the humblest undertakers in this field of industry made raw materials into finished cloth; nor altogether of size, for of two equally extensive establishments one might possess the features of a mill and the other of a factory. The definition depended rather upon a combination of equipment and organization." Generally speaking, after the acquisition of power-weaving, the textile mill became a factory. There was no immediate causal relation

operations. It grew into a mill, and ultimately into a larger plant or factory, or else it was embraced by merchant employers as a subordinate unit in a wider system of commercial production."

between these two facts; but usually plants devoted exclusively to spinning were " smaller, more simply equipped, and located in country communities. They followed the analogy of other mills in being owned by individuals or partners and in their relatively less systematic administration of labor." The particulars of the developed form are discussed more definitely in regard to the Boston Manufacturing Company, founded in Waltham in 1812: " Labor was specialized and workers organized by departments. Wages were paid in cash, output standardized, cost accounting introduced, and buying and selling systematized " (p. 450).

With respect to other manufactures, the distinction is not so clearly or fully stated; but on the whole it follows the same line. In the woolen industry, " with the introduction of water-carding, woolen manufactures entered the mill stage," and not until the decade of 1820–30, especially with the adoption of the Waltham system by the Middlesex Company of Lowell at the close of the decade, was the factory stage attained (p. 453). The development, in the second quarter of the century, of manufactures " requiring the mechanical production of uniform and interchangeable parts," such as the watch, sewing machine, and firearms industries, brought these forms of metal-working to the factory system, through " their wide use of power-driven automatic machinery, their systematization of processes, and their administration of labor " (p. 454). Finally, in the iron industry, the factory system was, it appears (p. 456), attained when, soon after 1830, " the technical transformation of this industry with the introduction of puddling and coal-smelting, and its commercial transformation with the growth of railways, made large plants possible and economical."

Such is the character of the " mill " stage, and such the features supposed to distinguish it from the preceding and succeeding forms. We may, then, return to our second question — is it clearly discernible as a separate stage in industrial development? To this we must return a firm negative. The indices by which Dr. Clark would distinguish the mill from the preceding forms are not decisive. Yet certain inference may be drawn from them. The fact that the work was performed neither " in the household nor at the workbench " and the fact that " power machinery " and " carefully observed processes " were important in mill operations would indicate that the criteria of a " factory " were there satisfied. These criteria may be stated as the labor of persons outside their homes, at hours fixed and under discipline imposed by an entrepreneur. There is agreement manifestly upon the first portion of the definition; and surely an establishment operating power machinery or carrying out definitely formulated processes is improbable, almost unthinkable, without fixed working hours and some measure of discipline. On the other hand, the difference between a " mill " and a " factory," under Dr. Clark's interpretation, is clearly only a difference of degree. Specialization of labor, cash payment of wages, standardization of product, completeness of mechanical equipment are no one of them essential features of the factory. In short, the author's fourth stage falls by the board.

Dr. Clark has called our attention, however, to an important point and has made thereby a contribution to the analysis of American industrial history. The " mill," tho not a separate industrial form, is undoubtedly a subdivision of a true form, that of the factory. Miss Hazard, in her discussion of the boot and shoe industry,[1] found it necessary to separate the " domestic " or " putting-out " system into several substages, altho we have too often thought of it as possessing a single, fixed character. Now Dr. Clark has pointed out that, at least in America, we must make a subdivision of the factory stage. The mill was the early form of factory production. Later — roughly in the twenties and thirties — came the rise of the more mature form, not differing in essentials, but manifesting more of the characteristics of the modern factory system. This maturity is signalized by the changes which Dr. Clark has so clearly analyzed — the attainment of more complete technical equipment, bringing all the main processes of a particular manufacture under the sway of power, and in the United States under one roof; the development of large-scale, uniform, systematized production; and the impersonalization of the labor contract indicated by the institution of cash payments and the gradual abolition of the mill store.

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[1] In this Journal for February, 1913.

To sum up: the *History of Manufactures* is an excellent compilation. It contains practically all the evidence heretofore gathered on the industrial history of the United States up to 1860. Yet it is more than a compilation. Much time and energy have been spent in research. Untapped sources have been disclosed and their contributions interwoven with the earlier material. No doubt, monographs upon individual industries will in time present additional facts. But this volume has brought forward so much in the way of new data that it cannot hereafter be neglected in the study of any important manufacture.

Monographs, however, have a still more important function to fulfil — the assembling and single-minded presentation of the material concerning the particular industry chosen. Dr. Clark writes in his preface that " separate histories of our more important industries " were " recognized as desirable " as accompaniments of this volume. The need for them has not been decreased by this publication. Considering, however, the purpose he had in mind — the exposition of the onward sweep of general manufacturing enterprise — Dr. Clark has given a consistent, orderly, and constructive picture. The attempts made at the interpretation of the known and newly adduced facts, while more successful in some cases than in others, are at various points stimulating and suggestive. The criticisms which I have directed at the several portions of Dr. Clark's discussion are manifestly not concerned for the most part with vital matters. The merits of the book overshadow them. The certainty of the volume's permanent value cannot be doubted.

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NOTES AND MEMORANDA

STANDARDIZATION IN MARKETING

WHATEVER differences of opinion may exist with respect to other functions of government, little is said or to be said against coining money and fixing the standards of weights and measures. Tho these two functions are grouped together in the same clause of our federal constitution, it is doubtful if it is generally realized how close is the logical connection between them. Both result in great economy of effort in the transfer of goods. The economy involved in transferring coined money rather than uncoined metal is apparent. Coining the metal merely enables it to pass from hand to hand without the labor of inspection, that is, without weighing it to determine its quantity and without testing it to determine its quality. It "sells" — if we may speak of selling money — on grade and reputation rather than on inspection. It is the most salable of all commodities, and the fact that it is so standardized as to make inspection unnecessary on the part of the "buyer" has a great deal to do in giving it its superior salability. By the same process of standardization, any other commodity may approach gold coin in salability, tho it may not quite reach it. At least it is safe to say that whenever it can be sold entirely on grade and reputation, and absolutely without inspection, its salability will be enormously increased.

A short step is taken in the direction of standardizing other commodities when the state establishes uniform standards for determining quantity, that is, when it fixes the standard of weights and measures. Without some uniform system even our present methods of selling would be much more clumsy and wasteful. Every buyer would have to have his own system for determining the quantity of his purchases. This falls short, however, in two important particulars, of what is accomplished when metal is coined in a modern mint. In the first place, the government actually coins the money or requires it to be coined according to its own rules; whereas in other cases it only defines the units of measurement and commands conformity to its definitions. In the second place, coins are standardized, not only as to quantity, but as to quality as well. There is no probability that any government will be called upon to do that which would be analogous to coining money — actually put up other commodities in standardized packages. Something is to be said in favor of fixing standards of quality as well as standards of quantity.

The reasons in favor of fixing standards of quality, whereever it can be done, are identical with those in favor of fixing standards of measuring quantity. They are all summed up in the superior economy of buying on grade and reputation as compared with buying on inspection. The buyer of an unstandardized commodity may have enough confidence in the sellers' system of weights and measures to avoid the necessity of weighing and measuring for himself; but he can scarcely avoid the necessity of inspecting the commodity in order to determine its quality. In some cases, the determination of its quality is easier than that of its quantity, but in other cases it is not. In all cases where quality can be standardized, there is economy of effort. So far as buyers can be saved the trouble of inspection, so far will they be enabled to economize the time and effort involved in making purchases, and so far, also, will the salability of commodities be increased. Whether this will reduce the cost of getting the standardized commodities from producers to consumers, or merely enable the consumers to use their time more advantageously to themselves, may be open to question; but the ultimate economic effects are much the same in either case.

Not the least among the advantages of a minute division of labor is the fact that each individual can avoid the necessity of being expert in many things and therefore has time to become a specialist in one thing. One of the advantages of the standardization of commodities is that the average consumer can avoid the necessity of being an expert judge of the many articles which he has to purchase. He may therefore utilize his time and mental energy in his own special field of work. There is, to be sure, something attractive in the custom of the well-to-do burgher going to market and selecting with the eye of a connoisseur the various articles needed by his household; but it is wasteful of time and mental energy. When he or his housekeeper is able to order by telephone, without any inspection whatever, and still get what he wants, more time is left for other things.

This will help to explain two very distinct tendencies in present day retail marketing methods. The first is to put more and more articles up into standardized packages. The second is to place more and more dependence upon the retailer, who, in many cases, is coming to regard his customers as clients to whom he is bound to give his own expert service. Both tendencies are designed to save the consumer the trouble of becoming an expert buyer. Neither tendency has, as yet, reduced the cost of getting products from producer to consumer. If the consumer utilizes the time saved in earning a larger income with which to purchase goods, it perhaps does him as much good as it would if these tendencies merely reduced the price of commodities.

One reason why these tendencies merely save the time of the consumer rather than reduce the cost of getting the products to him is that the standardization takes place only in the last stage of the process, that is, just before the commodities reach the consumer. In order to reduce materially the spread between the price which the producer gets and that which the consumer pays, standardization must take place early in the process. This will enable the standardized article to go through the channels of trade at a lower cost. If it has to be inspected every time it changes hands, the process is expensive and some one must pay the cost. Some products apparently cannot be standardized, and there must therefore always be a wide spread between the producers' and the consumers' prices.

A good illustration of the effect of standardizing a product early in the process of getting it from the producer to the consumer is found in the marketing of California oranges. They are graded and standardized as soon as they leave the orchards. All subsequent inspection is therefore unnecessary, and the cost of getting them to the consumer is reduced practically to the physical cost of haulage and handling. This has notably reduced the spread between the two prices. Many other commodities, such as wheat, cotton, pig iron and coal are largely sold on grade rather than on inspection. In these cases, the government has had very little to do with the standardization. Two recent acts of congress, however, have brought the government definitely into this field as the fixer of standards of quality. These are the Cotton Futures Act and the Grain Standards Act. Both give the Secretary of Agriculture power to establish grades and to enforce their use in the regular channels of trade. A number of states also have passed grading laws of various kinds. Four New England states have passed a uniform apple grading law, defining the contents of a standard barrel, describing the various grades of apples, and imposing penalties upon all departures from the standards prescribed.

Such legislative acts cannot be called in any true sense interferences with trade. They are designed to increase the freedom with which commodities may circulate. They are somewhat analogous to the work of the traffic policeman on a crowded corner. He may exercise authority and interfere occasionally with an individual's movements; nevertheless, the result of his so-called interference is greater freedom of traffic.

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EXHAUSTION OF THE SOIL AND THE THEORY OF RENT

Elsewhere in this issue Professor Ellsworth Huntington discusses, from a geographer's point of view, the causes of agricultural decay and agrarian discontent in ancient Rome. His well-known contributions to geography and climatology entitle his opinions to most attentive consideration. The topic is of absorbing interest, and its importance for problems of economic history is patent. I would add a few words in regard to its bearing on questions of economic theory.

Of late years, several American writers have laid stress on the exhaustibility of the soil and on the relation of this possibility to the Ricardian theory of rent. Conspicuous among them is Professor Fetter. His view, familiar to economists, is that land differs in no essentials from instruments made by man; that it is not fixed in supply; and that it is subject to waste and deterioration like any other part of the apparatus of production. There is no such thing, according to him, as the "original and indestructible powers of the soil" which Ricardo mentions in the opening paragraphs of his chapter on rent; and for this reason, among others, there is need for radical reconstruction of the entire theory of rent and interest.[1]

I doubt, however, whether this particular ground for wholesale revision is tenable. The solution of the historical riddle does not seem to me of cardinal importance for the theory of rent, either by way of illustration or by way of proof. Neither is the validity of the accepted view of the chemists on the possible or probable depletion of the soil's mineral constituents of decisive theoretical significance. I say the accepted view, for doubtless it is still maintained by most agricultural chemists; tho there are dissidents whose opinions have weight. All this is of no vital concern for economic theory, whose essential postulates concerning land remain the same whether we accept or reject the principle of exhaustibility.

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[1] Fetter, Economic Principles (1915), pp. 442–45.

The fundamental question for the theory of rent is whether there are *permanent causes of difference* between soils. The gist of the Ricardian proposition and of the "orthodox" theory lies in the element of differentiation. As Ricardo himself said, in another passage of the much quoted chapter, "rent is always the difference between the produce obtained by the employment of two equal quantities of capital and labour." So long as there are causes which bring it about that some natural agents respond permanently to man's labor with greater output than other natural agents, the essentials of rent after the Ricardian fashion persist. Let it be admitted that some elements of fertility of the soil can be exhausted, and that these elements of fertility must be restored. Nevertheless, if the process of restoration and of the maintenance of fertility is one which yields larger returns on some lands than on others, we have the differential element. The *response* to man's action varies.

As Marshall and others have pointed out, there are unalterable differences in the annuities of sunshine, of heat and cold, of precipitation, received by different stretches of land.[1] These alone serve to bring about ineradicable differences. The same is true of variations in ease of working. The flat and well-watered prairies of Illinois, just as they will always be more fruitful than the semi-arid lands of the Rocky Mountain region, so will always be easier to till than the hillsides of New England. There are differences of a similar unalterable sort in the physical makeup of different soils — whether they are sandy, gravelly, loamy, rocky. There are differences in the flow of moisture through the soil and in the need of drainage. No doubt it is true, as Marshall remarks, that after long continued cultivation, these differences tend to become less than they were at the outset. The land of an old country comes to have a more homogeneous texture.

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[1] See the admirable statement in Marshall's Principles of Economics, book IV, ch. ii, § 3 (p. 147, 6th edition).

But it is never reduced to complete homogeneity; differences persist.

For this reason it is immaterial whether land is or is not regarded as a fixed stock. Marshall sees in the circumstance of fixity an element of essential difference between land and instruments made by man. Professor Fetter seems to me more nearly in the right in maintaining that land is *not* a fixed stock. Land of any one particular kind or for any one particular use certainly cannot be said to be fixed in amount; urban sites, for example. Nor can it be said that the total stock of land in a given country, or even the total stock available for civilized man, is unchangeable in amount. True, the surface of the globe is fixed, and even the surface available for agricultural purposes. In an old country agricultural land is a limited space. Yet the " uses " of land in cultivation are susceptible of increase. So far as the economic supply is concerned, land may fairly be said to be flexible. But, to repeat, the supply, tho flexible, is by no means homogeneous, nor does it tend to become homogeneous. The differential element is not eliminated by man's use of the land.

Reference has been made to Ricardo's much quoted phrase, "the original and indestructible powers of the soil."[1] I suspect that the reason why Ricardo used the phrase and the point which he meant to bring out have been misunderstood. The emphasis should be on "soil," not on "indestructible powers." The phrase occurs in a passage which distinguishes between the rent of land and the rent of mines. As regards mines, Ricardo points out that " the compensation given for the mine or quarry is paid for the value of the coal or stone which can be removed from them, and has no connexion with the original and indestructible powers of the land." The owner of the mine does indeed receive a rent, as he explains in the next chapter (on the Rent of Mines); because some fixed stores of minerals are better than others. But the principles which are applicable to agricultural land, and especially " the laws which regulate the progress of

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[1] Principles, ch. ii (p. 35 in McCulloch ed.).

[agricultural] rent and . . . profits," are based on the recurrent and continuous use of the land — that is, on "original and indestructible powers" such as do not exist in mines. "This is a distinction of great importance," says Ricardo, and it is this to which his discussion of indestructible powers is directed. As is indicated in the passage which I have quoted in a preceding paragraph, the essential of his reasoning about rent is that it constitutes a differential return. And the fundamental question regarding rent and interest, land and capital — a most complex question, on which one should speak with much reserve — is whether in fact there is a differential return from land of a kind which is not secured from "capital" in the sense of instruments made by man. As I have elsewhere stated, the answer depends on the effectiveness of competition in bringing about equality of return from concrete capital.[1] Discussion on the exhaustibility of the soil and the fixity of land supply helps us little on this cardinal question.

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SOME CONSIDERATIONS ON LAND TAXATION

Single taxers favor heavy land taxes and tax-free improvements in order to increase building, relieve congestion and lower rents. The argument is that one would not suffer for long a burdensome tax on a vacant lot; he would build and rent in order to recoup. "The owner of a vacant city lot," says Henry George, "would have to pay as much under a single tax for the privilege of keeping other people off of it until he wanted to use it, as his neighbor who has a fine house upon his lot. It would cost as much to keep a row of tumble-down shanties upon valuable land as tho it were covered with a grand hotel or a pile of great warehouses filled with costly goods." Mr. George was not aware of the fact that the same would be true were lots tax-free. It costs as much to hold a tax-free lot as a tax-burdened lot. Why? Lots are valued according to their anticipated yield. Taxes are allowed for in the capitalization of land and are, therefore, no burden to the purchaser of land. A tax is a subtraction from yield, therefore a tax increase means a value decrease. A low value means a small interest burden. An increased tax burden is but a substitute for a high interest outlay. The cost burden on your real capital is the same whether land be subject to a single tax or tax-free. Your dollar will buy as many land uses under the one as under the other. If this is not so the accepted theory of capitalization on the basis of net earnings is a delusion. If you encourage building by freeing improvements from the tax you equally discourage the improvement of a lot by extracting its value in the form of a tax. The one equalizes the other. If you tax me $100 I am little concerned whether you assess it against my house or against my lot. The single tax would little influence the amount of building, rent burdens and congestion.

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[1] See my Principles of Economics, ch. 46, § 3.

The opponent of the single tax argues that under a single tax régime the tenant's rent must pay the interest on the value of a lot, the single tax, and interest on the cost of a building, otherwise no one would build and rent him a house. Thus they believe that the single tax would be shifted to the tenant in the form of a higher rent. This would result in congestion, in getting the most out of a limited space, in building high into the tax-free air. The single tax would be as a fixed charge on tenantry and its burden could be lightened only by distributing it widely, therefore low rents could be found only among a numerous tenantry on a limited space.

This, in my judgement, is a criticism without foundation. In this is met the same principle above mentioned. The single taxers and their opponents are but exhibiting the backward and the forward looking faces of the same thing. Higher land tax, lower capitalization and less interest outlay go hand in hand. The air is as interest free as it is tax free; there is no more reason for building high to dodge the tax than to dodge the interest charge. The logical conclusion for these thinkers (so far as I know they have shied from it) is that a tax on land is shifted. In the above I have given their thought a rather bold wording; the use of the word *shift* would save them from much circumlocution. If the single tax would discourage building on idle land then a limited area would be more intensively used — less land would have to do the land work. The greater the intensive utilization the greater would be the cost and the higher the price of land products. High taxes would be shifted to high prices. Idle resources, misdirected energy, scarcity of product and high prices would, according to their thought, be the unprofitable reward of a single tax régime. The futility of this word logic is that returns relative to costs would not be modified by a single tax, the thing changed is the form of the cost and not its amount. The motivating force of investment is profits and profits would remain the same.

Another set of kindred arguments is that of the diffusion of the unearned increment. These arguments form another unworkable tax-shifting scheme. The idea runs that the lure of the unearned increment is the cause of early frontier settlements. Reversely a single tax would discourage frontier settlements by absorbing the unearned increment. Under a single tax régime, asks Professor A. S. Johnson, " when would our Western forests have been cleared, our prairies transformed into fields of wheat and corn? Not in decades, but in centuries." Further, " under such a condition of development Kentucky would doubtless still be a dark and bloody ground, and the Ohio forests a haunt of outlaws." [1] The thought is that, in anticipation of the unearned increment, frontiersmen, for the time being, will tie up capital unproductively and work for a lower return than the normal wage. The development of new lands, the sacrificing of labor and capital upon them cause greater abundance of agricultural products and therefore lower prices.[2]

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[1] " The Case Against the Single Tax," Atlantic Monthly, January, 1914, p. 33.

[2] Johnson, ibid., p. 34, and T. S. Adams, American Economic Review, June, 1916, p. 271.

The assumption underlying this argument is that frontiersmen have poor judgment, that they suffer privation from an over estimate of the increase of land values. It follows from their assumption that national development, lower prices and community gain are results of misdirected energy. The greater the error in judgment the greater would be the national gain. If this argument is not based on the misjudgment of frontiersmen then it is self-contradictory, for if more than the unearned increment is shifted to national gain (and it must be more than shifted if wages are below normal and capital is employed at a sacrifice) then no unearned increment could be left for the frontiersmen.

These arguments, moreover, rest on false economic grounds. The extra cost of marketing for one beyond the border of remunerative industry will more than offset the extra costs of production nearer the market. The result of this is a larger total cost of production, and waste energy together with increased prices as a consequence of the reduction in supply. Production is not complete until the products are in the hands of the consumer. Production in the wilderness is not cheapest. If it were, competition would force all producers to the wilderness. It is a false economy which assumes that misdirected energy is a national boon, that production at the greatest cost means the lowest price, that the unearned increment is secured to the public by a scheme that would increase the cost of living. Two difficulties are in the way of such arguments; a false conception of the extent of the so-called unearned increment and the belief that a tax on land cannot be shifted, or at any rate a false conception of the manner in which the shift takes place. If it were seen that an unearned increment is as common to other agencies as to land the single tax bugaboo would have no logical basis. If it were seen how a tax on land is shifted we would have the true manner in which the unearned increment inures to society in the form of more products and cheaper prices.

Space forbids more than the briefest sketch on these points. Large and dramatic changes in values bring benefits both to sleeping partners and to active enterprisers in all lines of industry. The passive owners of land, war stock, lottery tickets, furs, copper, huckleberries, and saw mills may reap large gains from lucky turns in prices. Prices are made in the market and are largely beyond the control of any individual. The active enterpriser with the deep insight that gives foresight can best judge of price changes and movements in capitalization. He can so shape his enterprise as to reap the surpluses which always accompany industrial changes. The unearned increment is a question-begging phrase applied especially to the profit of the land owner. There is nothing peculiar to land profit. The teachings of Walker, Cannan, Hobson, and Clark on the extension of the rent problem and the general applicability made by these and later writers of the law of diminishing returns, cannot but teach that a common principle regulates the returns of all productive agents. The trouble with most economists on this point is that they get their geography and their economics mixed. They think of the supply of other productive agencies in terms of productive capacity and not in terms of bulk or weight, but when it comes to the supply of land they shift from a productive or economic basis to an area or geographic basis. It is but a truism that a superior organization which enables a laborer to turn out ten pieces a day instead of five pieces, really doubles the economic supply of labor; or that a new process or scientific method that enables a unit of land to yield ten bushels instead of five bushels does add to the productivity of land. The supply of productive agents is measured in yield, not in area or bulk. We must measure land as a productive agent in terms of its productive capacity. It is as logical that we do this as that we ask different prices for different qualities of land. Land capacity is what concerns the economist and whatever increases this capacity increases the land supply.

Instances of unearned increments might be multiplied indefinitely from all walks of life. The growth of complex social problems makes the lawyer's fifty thousand dollar fee a possibility; acquisitive advantages and monopoly gain are unthinkable apart from society; political security, educational, religious, and other social institutions are unearned benefits to the individual. National productive capacity in the form of natural resources together with our inherited knowledge of ways and means of how to harness, transport, and bend the utilities of man and nature to our service, form a fund of unearned social heritage. We can soon rebuild the ships, houses and current supplies destroyed by the war. If the war could destroy our knowledge of ways and means or the natural forces upon which they operate, civilization would be set back indefinitely.

The supply of land like that of other productive agents is measured by its yield. Other agents come from the land, therefore, to say that land is limited is to say that other agents are limited — all are limited by the natural principle of resistance. All are limited by and obey in their operation the law of diminishing returns. If the land supply is subject to change then there can be nothing peculiar in the unearned increment of land.

Let us turn to the manner in which a tax on land can be shifted. A tax on marginal land would throw it out of cultivation and thereby cause less land or fewer land uses to be cultivated. The result would be a greater scarcity and therefore a higher price for the products of land. In other words the tax would simply bring about a higher price for the products of land. A tax on the surplus or rent can be shifted. To the extent that you tax land you reduce its net returns to the landlord, but the landlord values his land according to its net returns, therefore to the landlord the land loses in value to the extent of the tax. The principle of proportionality teaches that less expenditure in the form of upkeep and repairs is made on the less valuable agencies. High tax means low land value, the discouragement of upkeep and improvements with the consequent falling off in the supply of land products. Thus a diminished supply means a shift in tax in the form of higher prices of land products. Prior to our Civil War we practised land butchery and that too with sound economic justification. The cheapness of land, the little cost of wearing out old land and shifting to new invited butchery. Labor and capital were scarce and their great value invited their most economical utilization. High tax, little net yield, low value, depreciation, low gross yield and high prices of land products go together.

The thrift which accompanies private property claims attention at this point. To the extent that a tax subtracts from net gain it puts the landlord in the position of a tenant. If a nine year's lease ruins the garden a heavy tax would tend to the same end. If the magic of property turns sand to gold the lower the tax the greater the tendency to that end.

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FINANCING THE WAR

SUMMARY

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I

SINCE no one can foretell where any war may lead or foresee how long it may last, the military and financial policies of the United States should contemplate a long contest of the first magnitude. The war which has convulsed Europe for nearly three years may be nearer its end than we suppose; but we have no right to take anything for granted, and should prepare for a contest that may demand the complete mobilization of the material and human resources of the country. In finance this means that we need a program. Intelligent foresight and comprehensive grasp of the situation should from the very outset control, and shortsighted or temporizing measures should be carefully avoided. Mistakes can be made during the next six months that will disorganize our currency, injure our credit, and enormously increase the cost of the war. Upon the other hand, by adopting a sound financial program now, we can, with a minimum of friction and waste, raise all the funds that may be needed to finance even this greatest of wars.

In such a program the first requisite is obviously economy in all expenditures, public as well as private. For the time being the chief business of the country must be to divert enormous sums from other objects and to devote them to the maintenance of armaments. This means that we shall have to go without many things that we might otherwise have, which is to say that we must practice economy. The citizen must be prepared to retrench in his private expenditures in order that the extraordinary needs of the government may be supplied, and the government should do its part by husbanding its resources with the utmost care. Heavy taxation of luxuries will give the citizen an extra inducement to perform his duty; nothing but rigid economy and efficiency will enable the government to do its part. At such a time private luxury and pork barrel legislation fall under the same condemnation. New undertakings not related directly or indirectly to military operations should be confined within the narrowest possible limits. And finally, if we are ever to have a rational budget system, the present is obviously the time for its introduction. This Congress should not adjourn without providing for a complete reorganization of future budgetary procedure.

So far there can be little disagreement, but concerning the next point there may be difference of opinion. In financing a great war, revenue from taxation must be supplemented by loans, but neither in theory nor in practice is there universal agreement concerning the proportions in which the two expedients should be employed. Since this is the most fundamental question connected with a program of war finance, it requires most careful consideration.

II

The first theory of war financiering is that upon which most wars have been conducted ever since the invention of national debts. According to it, the extraordinary outlay of a war should be financed by loans in order to avoid the inconvenience and disturbance occasioned by a heavy increase of taxation. Such a policy is deemed to be fair because it throws at least a part of the burden upon future generations, and is ordinarily adopted in full confidence that it will suffice for all probable needs. In short wars that make no serious demands upon a nation's resources it has often worked well enough, but in every protracted struggle it has spelled disaster. Of this our own history affords most striking and conclusive demonstration.

During the Revolutionary War our government possessed no effective power of taxation, and its experience affords no fair test of the financial policies which it adopted. In 1812, however, it possessed authority to levy taxes ample for all needs, and the wisdom of its financial measures may be tested fairly by their results. As early as 1807, when war was thought to be inevitable, Secretary Gallatin had outlined the policy which the United States subsequently followed, proposing that war expenditures should be defrayed by loans, and that taxes should be levied only in the amount necessary to provide for the expenses of government on a peace establishment and for interest on any new loans that might be created.[1] This plan of financing a war received a perfectly fair trial during the next three years because, out of a total extraordinary expenditure of $70,000,000, nearly 10 per cent was financed by taxation, so that somewhat less reliance was placed upon loans than Gallatin's theory strictly called for.[2] The result was failure, complete and decisive, leading to something very near a financial breakdown. It soon became difficult to float interest-bearing loans because investors saw the government's liabilities rapidly increasing without any material increase in its revenues, by which alone, of course, its ability or willingness to provide for its obligations could be safely judged. Treasury notes had to be issued in increasing amounts which tended to inflate the currency and therefore to increase the cost of the war. After the government's credit had been impaired additional taxes were at length imposed, but they yielded little revenue until the very end of the war when the mischief had already been done. In sum, impaired credit, currency inflation, and threatened collapse were the unmistakable results of this attempt to finance war expenditures exclusively by loans.

By 1846, when the Mexican War began, the lesson of 1812 appears to have been forgotten, and the same financial policy was adopted which had failed so signally a generation before. But the resources of the country had greatly increased, and the war proved a comparatively small affair which lasted less than two years and occasioned no strain upon our finances. Without levying internal taxes, the government contrived to meet some $14,600,000 of war expenditures out of ordinary revenues, while incurring a net indebtedness of some $49,000,000.[1] This time the loan policy had worked well enough, yet its success was due, not to its inherent strength, but to the short duration and comparatively trifling magnitude of the strain to which it was subjected. Under different conditions there is no reason for supposing that it would have worked any better than it did in 1812.

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[1] It should be said for Gallatin, however, that he advocated this policy because he thought that the war would so injure the commerce of the United States as to decrease the resources available for taxation, and that he recognised that under different conditions it might be "practicable and wise to raise by taxes the greater part, at least, of the annual supplies."

[2] Data upon this point, as well as upon the entire subject of the finances of the War of 1812, may be found conveniently in H. C. Adams's Public Debts, pp. 116–26, and D. R. Dewey's Financial History of the United States, pp. 128–42.

When the Civil War broke upon the country, it was natural that the government should revert to the policy followed in the war with Mexico. Secretary Chase recommended[2] that taxation should be confined to the amount needed for the ordinary expenses of the government and for interest upon loans, and that extraordinary expenses should be met by borrowing, estimating that this plan would require $80,000,000 to be raised by taxes and $240,000,000 to be procured by loans. Congress acted upon the secretary's advice, imposing such new taxation as appeared to be called for and authorizing a loan of $250,000,000. Thus the country entered upon a conflict which lasted four years and required unprecedented outlays, with a plan of finance that might have sufficed for another Mexican war but was certain to fail in a conflict of greater duration and magnitude.

The situation was complicated by a variety of circumstances, chiefly the unsatisfactory state banking system, which would have caused much embarrassment in any event; but after all allowance is made it is clear that Chase's plan received a fair trial, and that it failed as signally as Gallatin's plan in 1812. Difficulty was encountered at the very outset in floating bonds, and $60,000,000 of demand notes were authorized in 1861. These were followed in 1862 and 1863 by a much larger amount of legal tender notes, the so-called greenbacks, and by a variety of other short term obligations. Not until the third year of the war did long term loans begin to preponderate, and even in the fourth year interest-bearing notes actually exceeded the bond issues of the government. The inevitable result was currency inflation, by which the cost of the war was enhanced some hundreds of millions, and credit impairment which seriously hampered the government's financial operations.

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[1] Dewey, op. cit., pp. 255–56.

[2] Report on the Finances, July 4, 1861.

After much mischief had been done, but in time to save the situation, Congress, which in this matter showed more wisdom than the secretary, imposed heavy taxes to which the country loyally responded. Indeed, after the first year, the people seemed frequently wiser than their rulers, and the action of Congress in increasing taxation was partly in response to a widespread popular demand. This fact greatly impressed foreign observers, one of whom remarked to Mr. Seward: "I was not surprised to see your young men rushing enthusiastically to fight for their flag. I have seen that in other countries. But I have never before seen a country where the people were clamorous for taxation." And von Hock, the Austrian economist, has left on record the fact that he was attracted to the study of American financial history by the "wonderful spectacle" of a people who after being free from internal taxation for nearly half a century, "through love of country and zeal for the rights of humanity," willingly submitted to the heaviest taxation and assumed the burden of an enormous debt.[1]

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[1] C. F. von Hock, Die Finanzen und die Finanzgeschichte der Vereinigten Staaten von Amerika, Vorrede.

But time was required to devise a new system of internal taxation and get it into successful operation, so that not until the end of the war did the revenue from taxes attain its due proportion to the government's loans. In the first year taxes brought in $50,851,000, while loans and notes produced $433,663,000, the ratio of taxes to loans and notes being 1: 8.5. In the second year taxes yielded $108,185,000, and loans and notes $596,203,000, the ratio being 1:5.5 The third year the tax revenue was $212,532,000, and the loans and notes amounted to $719,476,000, the ratio standing at 1:3.4. And finally, in 1864–65, taxes supplied $295,593,000, while the loans stood at $872,574,000, the ratio being 1:2.9.[1]

By 1863, Secretary Chase was convinced of the unsoundness of the theory upon which the war up to that time had been financed, and in his annual report called attention to "the great importance of providing, beyond all contingency, for ordinary expenditures and interest on debt, and for the largest possible amount of extraordinary expenditures, by taxation." And he added: "It is hardly too much — perhaps hardly enough — to say that every dollar raised for extraordinary expenditures or reduction of debt is worth two in the increased value of national securities, and increased facilities for the negotiation of indispensable loans." [2] Hindsight is always easier than foresight, but it is usually more expensive; and the dear experience which brought Secretary Chase to the correct position which he took in 1863 ought not to be necessary in 1917. Since no internal revenue system existed in 1861, six months or a year would have elapsed inevitably before increased tax revenue could have been procured, but there was no reason why in 1862 and 1863 the treasury might not have been as amply supplied as it was in 1864 and 1865. As Professor Henry C. Adams, to whom we owe the first scientific criticism of our Civil War finances, has so justly observed, it is not easy to overestimate the financial benefits that would have accrued if the receipts from internal revenue could have been moved forward by two years.[1]

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[1] For these figures and other data about the Civil War finances see Dewey, op. cit., pp. 298–330; Adams, Public Debts, pp. 126–33.

[2] House Ex. Docs., vol. vi, no. 3, pp. 10–12, 38th Cong., 1st Sess.

In the Spanish War for the first time in its history the United States followed the correct theory of emergency financiering. The act of June 13, 1898, which authorized a loan of $200,000,000, also levied new internal taxes which, since the machinery of collection was already in existence, almost immediately increased the tax receipts and were presently furnishing an additional annual revenue of some $100,000,000. The war was of such limited scope and duration that the older theories of Gallatin and Chase could have been followed without causing disaster. But the sounder policy which actually prevailed has established a safer and better precedent which should be followed in the present great emergency. It cannot be doubted that, in the words of Professor Adams, "an adequate policy for the management of war finances is a tax policy assisted by credits rather than a credit policy assisted by taxes."[2]

The same lesson is taught by the experience of Great Britain and Germany in the present war. German theory and practice have long inclined unduly to favor public loans. This is probably due in some measure to the influence of Karl Dietzel, who taught that the State is a part of the capital of a country, and that outlays for the extension and strengthening of the State may be safely financed by borrowing.[1] It is due also to the successful financing of former wars by loans and indemnities. It was natural, therefore, that the German government should undertake to finance the present war by public loans which, according to report, have been utilized even for the purpose of paying interest. Only recently has taxation been materially increased, and a recent outgiving of the Kaiser indicates that he finds ground for satisfaction in the fact that taxes have now been levied to provide for interest upon war loans. The result is that one of the greatest of Germany's problems today is the state of her finances, and that serious doubt is expressed concerning the success of the next loans. Upon the other hand, Great Britain, altho compelled to borrow huge sums, has steadily increased her revenue from taxation, and is at present financing from this source no small part of her war expenditures. So far as the outcome of the war depends upon possession of the longer purse, there is no doubt as to which antagonist has the advantage at the present time.

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[1] Adams, op. cit., p. 132.

[2] H. C. Adams, Science of Finance, p. 542.

There are three main reasons why the exclusive loan policy has always failed under a severe and protracted test. Public credit depends primarily upon the ability and willingness of a government to support loans by substantial revenues from taxation; and when the latter are not provided, an impairment of credit inevitably follows. In the second place, if taxation is not increased in time of war, private expenditures are not curtailed, and the government must bid against its citizens when it purchases supplies, with the result that prices rise and inflation naturally ensues. Finally the security of public loans varies inversely as their volume, so that, as debts accumulate, a government's obligations at last become unattractive to investors. Ordinary prudence, therefore, dictates that a war should be financed as far as practicable by increased taxation, and that loans should be employed as sparingly as possible.

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[1] Das System der Staatsanleihen (1855).

III

The failure of the exclusive loan policy under any severe strain and the evils resulting from the swollen national debts which it entails have led not unnaturally to a second theory of emergency financiering which goes to the opposite extreme. Early in the nineteenth century David Ricardo, impressed by the condition in which Great Britain found itself in 1815, contended that wars should be financed wholly by taxation; and this theory now finds numerous advocates in the United States who would have the government avoid all loans, except such as may be necessary during the first few months, and finance the war wholly by taxes levied principally upon income and war profits. Since the practical difficulties of the plan are tolerably obvious, and it seems evident that for the present, at least, the government is unlikely to venture upon such a rash experiment, I will not undertake to consider it in this paper.

A sound program of war finance must avoid the extremes of exclusive reliance upon loans and exclusive reliance upon taxation. It will draw upon the supply of loanable capital in the hands of investors, and will also employ taxation to as great an extent as may be consistent with the welfare of industry. It must, except in direst need, avoid unnecessary strain upon any part of our industrial organization. We should tax heavily in order to minimize the strain upon national credit; but we must permit industry to prosper, and allow time for the readjustments which are going to be necessary. This means that at the outset we must rely rather more upon loans than upon taxation, and that, as the war proceeds, taxation should be increased as rapidly as experience shows this to be practicable. It is to be hoped that this is what President Wilson had in mind when he recommended that the war outlays be financed, "so far as they can equitably be sustained by the present generation, by well-conceived taxation."

There can be no doubt that the tax revenues of the government can be, and should be, increased immediately by not less than $1,000,000,000. Only the most careful investigation can show how far beyond that figure taxation can prudently be carried this year. Much depends upon our forecast of business conditions. If these can be expected to remain as favorable as they were in 1916, taxation can obviously be carried further than if we must look forward to a year of less prosperity. I venture in the most tentative way to offer the following suggestions.

The income tax should be increased as much as can be done without forcing too severe or abrupt readjustments. This will require numerous amendments to the present law, which will be considered in the concluding pages of this article.

The recently established tax upon excess profits, however objectionable in ordinary times, can be somewhat increased, but ought not to be made retroactive if that can possibly be avoided. The large profits of the last two years are not wholly disposable income. In many cases they must go to pay for new plants, or are needed for working capital. While war contracts have proved bonanzas in some cases, they have involved very large commitments for which full payment has not yet been made, and serious results might follow if taxation of excess profits should be carried too far.

By the act of March 3, 1917, the rates of the federal estate tax were raised to very high figures, which ought not to be increased. Beginning with a rate of 1½ per cent upon estates having a net value not in excess of $50,000, they reach the figure of 6 per cent upon the excess of any estate above $250,000, 9 per cent upon the excess of any estate above $1,000,000, and 15 per cent upon the excess of any estate above $5,000,000. Taken in connection with the inheritance taxes levied by the states, these rates are probably excessive. Since an estate or an inheritance tax does not fall equally upon all property in any year, but only upon property transferred in a particular way, its rate should be stable, in order that the amount of tax paid shall depend upon the size of a man's estate and not upon the year in which he dies. It is, therefore, not fit to be used as an emergency tax, and increase of the present rates should be avoided. After the war is over, some understanding and adjustment must be reached in state and federal taxation of inheritances. The claims of the states cannot be considered now, but the federal government should at least avoid making a bad situation worse. It is to be hoped also that Congress will not omit to make some adjustment for those who may lose their lives at the front.

The taxes upon tobacco, beer, and spirits should be immediately increased. That on spirits could probably be raised to $1.50 per proof gallon without making it difficult to enforce, and if the Bureau of Internal Revenue so advises, should be increased to $2.00 per proof gallon. That upon beer ought to be raised to at least $2.00, the rate which prevailed during the Spanish War, and unless administrative reasons forbid, should be increased to $2.50 or $3.00. The tax upon tobacco is much lower than is imposed by many other countries, and I see no reason why it should not be advanced to twenty cents per pound upon smoking and chewing tobacco, with a corresponding increase in the rate upon cigars and cigarettes. From these three duties an additional annual revenue of $150,000,000 and upward can probably be obtained.

Stamp taxes, such as were levied during the Spanish War, should at once be reimposed, and with such rates as would be justified in the present emergency might readily be made to yield from $80,000,000 to $100,000,000. To these should certainly be added taxes upon theatre tickets and tickets of admission to moving picture exhibitions, while advertisements of all descriptions might well be laid under contribution.

A heavy tax ought to be levied upon gasoline, since the government will have to purchase large amounts of this commodity for its own use and ought to discourage consumption by automobiles and motor boats.

Finally, import duties should be imposed upon tea, coffee, and cocoa, which are now untaxed and could readily yield $60,000,000 per annum. There are doubtless other imported luxuries upon which duties can be increased. It would seem also that the present emergency calls for the restoration of the sugar duty to the point of maximum revenue.

All these suggestions, with the exception of that relating to sugar, are premised on the theory that it is practicable and desirable to raise somewhat more than $1,000,000,000 from taxes that will not tend to increase the cost of articles necessary for subsistence. More detailed investigation, such as I have not had opportunity to make, might show that very much more revenue can be raised without undesirable results; and if so, taxation ought to be carried further than I have ventured to suggest. But, whatever plan of finance may be adopted, we can hardly avoid an upward tendency of prices during the coming year, and such a tendency ought not to be accentuated by a general excise system such as was introduced during the Civil War. If later on more revenue is needed than can be obtained from other taxes, it will be possible to make a more extensive use of customs and excises, but for the present this should be avoided. It is obvious, therefore, that the suggestions here made leave untapped vast resources of indirect taxation upon which the government can draw in case of need.

As this is written, the Treasury Department has just given out a comprehensive plan for the first war loans. Since this may be subject to change, I will not consider it in detail but will confine myself to some general observations concerning public borrowing in time of war.

It is to be hoped that the government, whatever else it does, will minimize its use of transferable certificates or obligations. Such evidences of indebtedness, even tho issued in large denominations, can serve to some extent as a medium of exchange, and therefore are very dangerous. One of the great evils of Civil War finance was the large resort to short term notes and certificates which more or less contributed to the inflation of the period. If money is needed during the next few months in anticipation of taxes or permanent loans, the government ought to borrow from the banks in the ordinary way, and avoid, if possible, the issue of transferable notes or certificates. Any temporary obligations issued should be in large denominations, should run for short periods, and should be transferable only by registration. This may require a somewhat higher rate of interest, but that is a small consideration compared with the danger of inflation.

The important thing, to which other considerations for the time being should be subordinated, is to issue long term loans that will be attractive as permanent investments. This requires first of all that such loans shall be convertible into any others that may subsequently be issued at higher rates of interest, and very wisely the Treasury Department has provided for this in the bill recently submitted to Congress. All investors should be treated alike, and the first issues will certainly not be as well received if subscribers face the possibility that the value of bonds may subsequently fall as a result of the issue of new loans at higher rates of interest.

It is further important that the Treasury should be authorized to deposit in any banks the money raised by loans. The huge sums needed ought not to be withdrawn from the ordinary commercial banks and accumulated either in the federal treasury or to an undue extent in the Federal Reserve Banks. They should be kept as nearly as possible in their accustomed places in order to minimize the disturbance occasioned by the loans. This arrangement will obviously give to all banks greater ability to encourage and assist their depositors to subscribe to the loans.

Another leading consideration is that controllability is more important than the rate of interest which the government pays during the duration of the war. For emergency financiering it is probable that no better security can be devised than a 5–20 or 5–25 bond, redeemable at the option of the government after five years, and payable at the end of twenty or twenty-five years. Experience with our federal sinking fund has been so unsatisfactory that it ought to be provided that, after the war, the present loans should be payable on the serial plan in equal annual instalments. Provision should be made, however, that, in case of a future war, the government should be permitted to suspend redemption in order that it may never be in a position where it will be obliged to pay off instalments of old debt while contracting new loans at a higher rate of interest. War loans of the United States should first of all be controllable so that they may be refunded upon more favorable terms, if that becomes possible after the war; and provision should then be made to insure their repayment within a reasonable number of years.

It would be a great mistake at this juncture to regard the rate of interest paid during the war as the primary consideration. Rapid absorption of loans by permanent investors is vastly more important. In proposing to borrow $5,000,000,000 at 3½ per cent the government is stressing the wrong factor in the problem; and in order to do this, is making a bad bargain by exempting the bonds from the income tax, as will be pointed out later. Unusual conditions may enable the United States to float, in instalments, $5,000,000,000 of bonds at 3½ per cent, but nothing except a bad bargain with income taxpayers will make that possible. The moment that subscriptions lag, it is very important that the rate of interest should be permanently increased. At such a time there will be temptation to resort to temporary financing which may injure the credit of the government and easily take a form that will cause inflation. This was one of the principal errors committed during the Civil War, and it ought not to be repeated today. If provision is made by which bonds may be refunded at the end of five years, it will be far cheaper for the government to offer a higher rate of interest and avoid temporary expedients that are likely to increase greatly the cost of the war.

Another thing to be avoided, if possible, is commandeering the resources of the Federal Reserve Banks and the other banks that are members of the reserve system. Financial institutions must, indeed, do their utmost to facilitate the floating of loans, and they should also make such temporary loans to the government as their condition will permit. But if serious trouble is to be avoided, the resources of all banks should be kept as liquid as possible, and they should not be expected to absorb a large part of the permanent loans. We are entering upon a period of readjustment, and the banks should be permitted to function as nearly as possible in a normal manner. Every dollar taken from the liquid resources of the banks may diminish by three or four their ability to assist in placing permanent loans.

IV

Whatever plan of finance may be adopted, it is certain that the income tax must be materially increased; and I shall conclude this paper with some observations concerning that tax.

The exemptions now granted under the normal tax are much too high, and should be reduced. In 1913 liberal exemptions were justified on purely administrative grounds, if upon no other, but today the tax is in successful operation and such considerations no longer control. I venture to suggest that the exemption to a single individual be reduced to $1000, and that an exemption of $2000 be granted to husband and wife. An additional exemption of $200 might then be made for each minor child up to the number of five, with the result that for a family of seven persons the total exemption would be $3000. Such an arrangement would yield a substantial amount of revenue from incomes that now contribute nothing, and would still allow a generous scale of exemptions.

In the next place, specific and effective provision should be made for including in a person's taxable income the fair rental value of a dwelling-house occupied by the owner and the fair value of produce consumed on a farm. The exemption of these items introduces into the present law a serious inequality, since it exempts an important part of the real income of certain classes of taxpayers while other classes are taxed upon money incomes expended for house rent and household supplies.

The ordinary tax upon corporations will be difficult to increase without changes in the provisions relating to collection at source. At present the average corporation is obliged to assume payment of the ordinary tax upon bond interest and upon that part of the profits distributed to holders of preferred stock. It therefore comes about, if the tax is not shifted, that the holders of common stock may be taxed at two or three times the ordinary rate. Further than this, the present law, by refusing to grant a deduction for taxes paid by subsidiary corporations, imposes a multiple tax upon some portions of the income of many companies; with the result that, if the ordinary tax is increased, the burden of such multiple taxation may become very serious. With a rate of 5 per cent, which might not otherwise be excessive, some corporations would be compelled to pay taxes amounting to 10 or even 15 per cent of the income available for distribution to holders of common stock. This difficulty may not have been great when the rate of taxation was one per cent, but it cannot be left out of account if the rate is to be increased to meet the present emergency.

I have discussed in another place[1] the problems arising from the attempt to collect the ordinary tax at the source, and will not dwell upon the subject in this paper. But it is clear that the present law, in its application to corporations, has given us in effect a business tax which exempts large numbers of investors and falls with very unequal weight upon holders of common stock. In the case of public service companies, the present tax imposes a burden which must be taken into account in the adjustment of rates, and is bound to be shifted in the long run either in the form of higher charges or poorer service. Regulating commissions may, indeed, proceed upon the theory that taxes should be disregarded in determining reasonable rates; but recurring charges cannot be met indefinitely out of surplus account, and in some cases surpluses have already fallen below the point where they should be maintained in order to protect the credit of the companies. Collection at the source, when it was adopted, seemed to offer important advantages in administration, but it has produced other results which must now be taken into account if the rate of the ordinary tax is to be increased.

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[1] Proceedings of the National Tax Association, vol. viii, pp. 264-79.

By the introduction of a system of information at the source, the difficulties now attending the operation of the ordinary tax could be wholly removed, and the burden of that tax would be placed upon investors where it really belongs. Such a system would be quite as effective in preventing evasion of the ordinary tax, and it would give the government a great deal of valuable information it does not now possess concerning incomes subject to the additional tax. The experience of Wisconsin and, more recently, that of Massachusetts have shown that, with just and effective administration, a system of personal returns, supplemented by information at source, will insure collection of the tax; so that there is now no reason to suppose that the federal government cannot tax incomes unless it employs the method of collection at source. During the present year under the Massachusetts income tax more than 180,000 returns have been received, and it is already evident that the tax has been a success. The state now has a large body of information which would be useful to the federal collectors, and if the United States would adopt the principle of information at source, provision could then be made for most helpful coöperation between federal and state authorities in taxing incomes.

The additional tax levied by the federal government is now imposed upon investors, as the ordinary tax ought to be. It has therefore avoided the difficulties to which I have just referred, but unfortunately encounters another difficulty. Since it is a progressive tax, it ought to be imposed upon the whole income of the taxpayer, because it proceeds upon the theory that ability to contribute increases with the size of a man's income. But the present law exempts income from United States bonds, from the obligations of a state or any political subdivision thereof, and from securities issued under the provisions of the Federal Farm Loan Act of 1916. The result is that the scale of progression is in practice governed not by the amount of a taxpayer's income, but by the character of his investments. Even with its present rates, the additional tax has created an artificial demand for tax-exempt securities; and if the rates are increased, this demand will be greatly intensified.

Assuming that the interest on outstanding bonds of the United States must in any case be exempt, it is all the more important that a correct policy should be followed in respect to new loans. If the government were levying only a proportional tax, it could reasonably expect that exemption of the bonds would lead to a corresponding enhancement of their prices. But the additional tax gives to large investors a much greater inducement to purchase government bonds than the ordinary tax gives to the small investor, and it is certain that the price of the bonds will not be enhanced to a degree commensurate with the exemption secured by persons having large incomes. To this point attention has already been called by Professor T. S. Adams.[1] It is true, of course, that if people with the largest incomes could, or would, absorb the whole of the new loans, the price of bonds would be increased to an extent commensurate with the advantage of exemption from the additional tax. But a great part of the loans must be taken by persons with smaller incomes who will not pay so great a premium for them, and the price will be fixed by this class of marginal investors. If, therefore, the bonds are exempted, it is clear that the government will not receive in the form of a higher price an equivalent of the exemption from the additional tax, which exemption, be it noted, not only relieves large taxpayers from taxation upon interest received from the government, but also reduces the rate of the additional tax upon the rest of their income. This difficulty may not at the present moment offset the advantage derived from a rapid absorption of the war loans, which is manifestly the great desideratum. But it is an additional reason for providing that the loans shall be redeemable at the expiration of five years.

In any event, it is clear that the exemption of state and municipal bonds and the exemption of securities hereafter issued under the Farm Loan Act ought not to be continued. The latter exemption may be small today, but it will steadily increase in importance, and will vitiate the operation of the progressive tax as long as it continues. The former is already important, and should receive immediate consideration. State and municipal bonds for two or three years past have been in unusual demand because they are free from the federal income tax. As the rate of the additional tax is increased, it is obvious that there will be a greater artificial demand for such securities, which would be undesirable under any circumstances and is positively dangerous now. This is not a time when states and municipalities should compete with the United States for loans, so that the situation calls imperatively for taxation of state and municipal obligations. It is true that in the case of Pollock *v.* the Farmers' Loan and Trust Company, in 1895, the Supreme Court of the United States held that the federal government had no power to tax state and municipal bonds. But this decision has been overruled by the adoption of the sixteenth amendment, which expressly authorizes Congress to levy taxes on incomes "from whatever source derived." Upon other grounds it would be desirable to bring to an end the policy of exempting any class of securities from the income tax, since such exemption creates a large class of investors who, to the extent that they hold "non-taxables," have no interest in governmental expenditures. With the adoption of highly progressive rates, the policy of exemption becomes a rank absurdity, and the present is certainly the time to bring it to an end.

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[1] The New Republic, April 7, 1917.

Readjustment of the rates of the income tax will, of course, be necessary. If the normal tax could be reorganized so as to place the burden upon the right shoulders, its rate could be increased to 5 per cent. If such reorganization is not effected, the rate of the ordinary tax should probably be left at about its present figure, and the additional tax should be imposed upon incomes in excess of $4000 or $5000. For the year 1917 the maximum rate on incomes subject to the additional tax should not exceed 25 per cent. Since revenue is immediately needed, perhaps the best course would be to make a surcharge of 50 per cent upon all income taxes levied this spring under the act of September 8, 1916. This would give a maximum rate of 19½ per cent for the additional tax upon increments of income in excess of $2,000,000, to which would be added 2 per cent more on account of the normal tax. For the taxes levied in 1918 in respect of incomes received or accrued during the year 1917, higher rates will be desirable; and if the war should continue for three years, still higher rates must be imposed. It is probable that for 1918 the additional tax, without injury to industry, can be raised to 40 per cent upon increments of income subject to the highest rate and that the following year it can be increased to 50 per cent. In this matter, however, Congress should be guided by the conditions of business at the time decision is made, and it would be rash to try to determine at the present moment precisely what the ultimate limits of income taxation ought to be.

The general principle to be followed is that of charging what industry will bear. For the year 1917 commitments have been made, and only a certain amount of readjustment is desirable or possible. In 1918, however, many readjustments will have been effected, and the income tax can be increased to a figure which would not be justified at the present moment. It is not a question of duty or willingness to contribute, but one of changing industries and investment markets from a peace to a war footing. The purpose of Congress should be to effect this transition in such a manner as not to decrease the amount of taxable income, and therefore the source of revenue, available in the second and third years of what may prove to be a protracted war.

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INTERNATIONAL TRADE UNDER DEPRECIATED PAPER. A CONTRIBUTION TO THEORY

SUMMARY

I. An assumed case of large foreign borrowing by a paper money country, 381. — Consequences on the rates of foreign exchange, 382. — A digression: present conditions in Germany and Europe abnormal, and little pertinent to this discussion, 384. — Effects under ordinary conditions on the prices of exported and imported goods, 386. — A transition stage; is there a bounty on exports? 388. — II. Ultimate effects, as they would be if both countries were on the gold basis, 391. — In what way, in such case, international lending may lead directly to increased exports of merchandise, 392. — But increased exports are usually the indirect consequence of gold movements, 394. — Resulting changes in relative wages and prices, 395. — No such mechanism, however, in case of depreciated paper, 396. — An analogous result, yet a different one, through the movement of goods, 397. — III. Difficulty of verifying this analysis through inductive inquiry, 400. — Partial verification of a confirmatory character not impossible, 402.

The usual statement of the theory of international trade and of the foreign exchanges assumes that the same metal — gold, — is the basis of the circulating medium in the trading countries, and moves freely from one to another. The quotations of foreign exchange range between the narrow limits of the gold points. A comparatively slight disturbance of international payments leads to a flow of specie, and sets in motion a train of forces, either in the money market in the narrower sense or in the general price market, which tend to check the flow of specie and bring about a new equilibrium. It is obvious, however, that this machinery cannot operate under dislocated exchanges, where the monetary systems of the trading countries do not rest on the same basis. The mechanism is necessarily different. Then the transactions between countries are affected by fluctuations in foreign exchange much greater, as well as more rapid, than can take place where all are on the gold standard; the compensating influence of gold shipments is lacking.

Much as has been written upon this subject, especially in connection with the changes in the price of silver and the consequent fluctuations in exchange between gold-using and silver-using countries, the theoretic aspects of the problem have not been exhausted. More particularly the course of "international values" has received scant attention; meaning by that term not the foreign exchanges, but the eventual outcome in the barter of commodities for commodities between nations, and so in the gains ultimately secured from international trade. The present paper deals not only with the mode in which the mechanism functions under the quasi-abnormal conditions, but also with the ultimate consequences on international barter under these same conditions.

I

For the purpose of analyzing and illustrating the principles involved, resort may be made to the familiar method of hypothetical isolation of causes. Let it be assumed that there are two countries, Great Britain and the United States, one of them under a gold standard, the other having inconvertible paper currency. This, of course, was in fact the situation during the period from 1862 to 1879. Let it be assumed further that at the outset foreign trade between the two countries is simple and is at equilibrium — that there are merchandise transactions only, and that the specie value of the imports balances the specie value of the exports. It is a natural and probably necessary part of this general assumption to suppose also that the specie premium in the United States conforms to, and is indicative of, the real depreciation of the paper — that is, the advance of general prices above the level at which they would be under a gold standard. Such is tolerably certain to be the case when things have settled down; then the specie premium conforms to the price level; and, as is proper in this sort of inquiry, we start our hypothetical analysis with a settled state.

Suppose now that a new factor enters into the trade between the two countries. Let it be heavy borrowing by the United States — what is called an export of capital from Great Britain. Sundry individuals or corporations in New York borrow heavily in London and are entitled to receive funds from London. What will be the consequences upon the foreign exchanges and the course of international trade?

The first result will be a larger offering of bills on London in the New York foreign exchange market. This is the necessary consequence if the tenor of the particular transactions, or of any part of them, is such that the New York borrowers are given the right to draw upon the London lenders and therefore have sterling exchange to sell in New York. It is conceivable, of course, that the tenor of all the transactions should run the other way; that the London lenders should engage to transmit to New York, and that the first step in the series would be taken in the London market alone. Then all the London lenders would appear in that market as demanders of New York exchange. The effect of the two sorts of transactions, of course, soon becomes almost identically the same.[1] For the purposes of the present discussion the simplest mode of dealing with the problems is to suppose that half the transactions take place in the one way and half of them in the other. One-half then result in a demand in London for New York exchange in greater quantity than before; the other half result in the offer of sterling exchange in New York in greater quantity than before.

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[1] As a matter of fact the transactions between London and New York usually take place in the way first mentioned, that is, in the New York market for sterling exchange.

Sterling exchange consequently goes down in price in New York. More bills are offered; by supposition there is nothing to change the conditions of demand; sterling exchange must fall. But sterling exchange runs parallel to the specie premium and indeed may be the sole indication of the existence of a premium. It means the same thing as command over gold. Not identically the same thing, of course. Sterling exchange is not equivalent to an *immediate* supply of gold, deliverable at once; it means a supply available for delivery within a fortnight or so.[1] There may be the same divergence between sterling exchange and the gold premium which there may be under normal conditions between sterling exchange and gold parity. This cause of divergence, presumably of slight quantitative importance as compared with the gold premium, may be neglected for the purpose of the present inquiry. Substantially, sterling exchange means gold, and a fall in sterling exchange means a fall in the specie premium.

This consonance between foreign exchange and the specie premium, it need hardly be remarked, appears with exactness only under normal commercial and financial conditions. It is not to be looked for when imports and exports take place irregularly and uncertainly, and when the flow of specie from country to country is interrupted. Under such conditions, for example, as have existed in Germany during the last year or two (1915–16), it would be unwarranted to use foreign (gold) exchange as a certain indication of gold premium and paper depreciation. True, Germany, like most of the warring countries, is on a paper basis. Under ordinary conditions, in a paper-using country, exchange on a gold standard country means a command of gold at an early date and with insignificant transportation expense. But obviously this is not the case with Germany at the present time. The interruption of trade is so complete that in Berlin exchange on the United States, for example, means a very uncertain command over gold. The same is true, tho with a less degree of uncertainty, of Scandinavian and Swiss exchange. And the situation is similar as regards mark exchange in New York. Under normal conditions of international trade the holder of a bill on Berlin would have the option of sending his bill to Germany, buying German goods, and bringing the German goods to New York for sale. His bill would be convertible not indeed into German gold, but into German goods, and its value in New York would depend upon the prices at which he could buy goods in Berlin and sell them in New York — in other words, on the price levels in the two countries. But nothing of this sort is to be predicated under existing conditions. Goods cannot move from Germany to the important gold-using countries, just as gold cannot move from these countries to Germany. Foreign exchange in Germany is not now subject to the steadying influence of the ordinary operations of international trade.

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[1] The period was at least a month before the permanent establishment of cable communication.

Hence the present situation in Germany differs radically from that of the United States during the paper money period, or of Chile at the present time. With a free market for gold and for commodities, we may assume confidently an almost exact parallelism between foreign exchange and the price of gold. Indeed it is immaterial whether the paper price of gold be quoted directly at all—as it was, for example, in the New York gold room from 1862 to 1879. The quotations of foreign exchange tell the tale; they register the depreciation of the paper in terms of gold. Under such conditions as now prevail in Germany, on the other hand, foreign exchange is by no means a certain gauge of depreciation even in terms of gold. There is, of course, no quoted price of gold; public sentiment and legal prohibition are both potent to prevent any one from overtly selling gold for paper at a premium. But even if this were done, the gold premium might readily show a marked divergence from the quotations of foreign exchange. A paper money régime is perhaps to be described in any case as abnormal, in the sense that it brings unusual forces to bear on foreign exchange and international trade; but such a situation as now obtains in Germany may be characterized as *abnormally* abnormal, in that the entire mechanism of trade between nations has broken down.

Other countries of the Continent — Austria, Italy, Russia — are in a similar situation; Germany simply offers the most conspicuous example. In France foreign trade doubtless is not so radically different from that of peace, yet is far from normal. Even in Great Britain, tho specie payments are not overtly suspended, the movement of merchandise, and of gold and the course of foreign exchange, are by no means those of a free market.

This, however, has been digression. We are concerned here with the comparatively simple case of paper money and distorted foreign exchange under a continuance of peaceful and regular international dealings.

The main thread of the argument may be resumed: what is the effect of borrowing operations, not only on foreign exchanges and the specie premium, but on imports, exports, the course of prices in the trading countries?

A fall in sterling exchange in New York, and a corresponding fall in the specie premium, mean a fall, next, of the prices of exported commodities — that is, of their paper prices. These commodities depend upon the foreign market, where they are sold in gold. The gold prices are translated into the current paper prices — the effective yield to the American sellers — through foreign exchange and the specie premium. A decline in the gold premium means a fall in the current paper prices of exports. The same circumstance obviously affects the imports in precisely the opposite way. Sterling exchange is cheaper, and imports are more easily paid for. The tendency of the chain of operation is to make exports from the United States less profitable than before and imports into the United State more profitable.

Further, the proximate effect is that the specie premium falls as compared with the general price level. In the stage of stable equilibrium which we assume to exist at the outset, the specie premium is in accord with the real depreciation of the currency. It is now less; the price of gold is lower as compared with the general enhancement of prices. And the same is true of the prices of exported commodities. They are no longer raised in price by the inflated currency conditions to the same extent as commodities in general. Tho higher in price because of the paper money régime, they are not higher in price to the same degree as commodities in general. Relatively, their prices are lowered.

A distinction must be made (and borne in mind) between two different sets of circumstances or factors, which affect the specie premium and the foreign exchanges in different ways. They may be designated for convenience as "extraneous" and "inherent." "Extraneous" circumstances are those which have their origin outside the ordinary merchandise transactions of international trade; international borrowing, for example. These cause fluctuations — a rise or fall, as the case may be — in foreign exchange and in the premium, and merchandise movements are affected as a *result* of the fluctuations. But these merchandise movements may fluctuate from "inherent" circumstances, and the fluctuations then act as *causes* affecting the premium and the exchanges. Suppose, as an example of this second situation, an unusually large crop of American wheat and consequent large sales of wheat for export. Sterling exchange is offered in greater quantity than before, and declines; the specie premium also declines. Other exports of merchandise (e. g., of wheat) are of course depressed and checked. But wheat may be a dominant article of export, and its export sales may be so large as to be the cause of a marked decline in exchange.

An "inherent" factor may act either to reënforce an "extraneous" one, or to neutralize it. There may be large offerings of sterling exchange by American borrowers at the same time that American wheat exporters are selling their wheat bills. Or on the other hand there may be a scant wheat crop and therefore an unusually small offering of wheat bills in the foreign exchange market, while the deficiency is yet made up by the bills of American borrowers. Then exchange (with the specie premium) will move on an even keel. In the present discussion it is the extraneous circumstances that we are considering: not in what way variations in merchandise imports and exports will affect foreign exchanges, but in what way *other* than merchandise transactions will affect it, and then will exert an ulterior influence on the merchandise movements themselves. And, to repeat, we are isolating these extraneous causes, endeavoring to ascertain what effects they will have if allowed to operate undisturbed.

The converse set of shifts to those described above appears, of course, in London. Recalling our supposition that half the transactions take place through remittances which London lenders make to New York borrowers, we find in London a greater demand for New York exchange than there was before. New York exchange rises. The British exporters — those who have sold goods to American buyers and who have exchange on New York to sell — get more for their bills. On the other hand, those Englishmen who have made merchandise purchases in New York and who by the terms of the transactions are called upon to make remittances to New York, must pay more for their bills; they are in the same situation as the lenders themselves, who have also to make remittances to New York. British exporters to the United States find business more profitable than before; whereas those in Britain who are importing from the United States find business less profitable than before.

Thus there develops a stage which is indeed, as will appear presently, only a transition stage yet may last for a considerable period. During its continuance exporting industries in the United States are discouraged, and importing operations are encouraged. In Great Britain imports are discouraged, exporting trades flourish. There arises a bounty, as it has been called, upon exports from Great Britain to the United States, and a burden on exports from the United States to Great Britain. The handicap in both countries is greater than it could possibly be under a specie system.

It is the consequence of the fall in the price of gold in the United States — its fall relatively to commodity prices. I say relatively, for it is quite conceivable that the specie premium in fact should rise, if during the same period the issues of paper money happened to be swelling so that all prices should be on the upgrade. But under the supposed changes in international payments, the specie premium, even tho it should rise, would rise *less* than general prices, and would be less than the real depreciation of the paper. And if by chance the paper issues happened to be shrinking, and if the general drift were a lowering of prices, the specie premium not only would fall, but would fall *more* than the general price level.

It will be observed that a " bounty " on exports from Great Britain is here supposed to ensue; a bounty, that is, on exports from the gold standard country. In many discussions of the problems of dislocated exchanges, whether in relation to silver-using or paper-using countries, it is supposed that the bounty is always on the exports from the silver or paper countries and operates always to stimulate shipments of goods from them to the gold standard countries. There is no logical ground for any such general statement. The influence on commodity movements in any event is a transitional one; it is due to the divergence between general prices on the one hand, and the price of foreign exchange and gold on the other. And during the time for which the divergence lasts — very likely a considerable time — it may run either way, and may stimulate or depress exports. It operates to promote exports from the country which has payments to make.

Some of the confusion or misapprehension on this subject arises from a confusing use of the terms " creditor " and " debtor " countries. A lending country is supposed to be also a creditor country, in the sense that it has a balance to receive, a balance of remittances to be made to it. As a matter of fact, a lending country may be in just the opposite situation. Indeed, the proximate effect of lending obviously is that the lenders have remittances to make to the borrowers. The "creditor" country becomes, in the first instance, a debtor in the international account. Only in the long run does it become a creditor in the sense of having a balance of remittances to receive — after a prolonged period of lending and an accumulation of interest payments on consecutive and continued loans. And the "bounty," for either sort of situation, arises not from the mere fact of a balance of remittances one way or the other, but from a transition stage in the working of the mechanism. It is effective only so long as general prices and the specie premium (foreign exchange) are out of gear with each other.

A word more on another aspect of the "bounty" from dislocated exchanges. The mere issue of paper money has been often spoken of as causing a bounty on exports from the paper-using country. It has no such effect unless it influences the prices of export commodities *more* than the prices of other things — domestic prices and money wages. This may indeed happen. An increase in the supply of money — whether specie or paper — does not necessarily or even probably affect all commodities and all money incomes alike and simultaneously. It has confused and irregular effects, depending on the individuals into whose hands the added money first comes, and the directions in which they spend it. It may conceivably affect exported commodities more or less than others; and on this more or less depend the immediate consequences in international sales and remittances.

The case we are here examining is of course a different one — not an increased issue of paper money, but a change in international payments under a supposedly stationary volume of paper. The proximate consequences then are to be predicted more readily. There will be, to repeat, a transition period during which a "bounty" arises on exports from the country having the remittance to make—the lending or creditor country; and there will be a similar bounty on imports into the borrowing country, that is, the country to which a remittance has to be made. The bounty will not be permanent; it will cease when the transition period is over.

II

We may proceed now to a consideration of the difference between the immediate or transitional effects and the ultimate effects. The ultimate effects are in some respects similar under dislocated exchanges to what they are under the simpler conditions of gold standard exchanges, in some respects different. It will be well first to recall the theoretic analysis of these simpler conditions and follow the course of events which would ensue if both countries were on the same (gold) monetary basis.

If both Great Britain and the United States were on a gold basis, American borrowings in London must result in a flow of specie from Great Britain to the United States. "*Must* result," — this puts the case too strongly. The flow will not necessarily take place; possibly there will be none at all. And such flow as does take place is not likely to be equal in volume, either in the very first stage or later, to the amount of the loan. And yet it can be said almost with certainty that some specie movement there will be.[1]

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[1] The reasoning here assumes that neither country produces gold. If one of them had considerable gold mines, the effect would more probably be not an actual inflow of

The possible but improbable case in which there will be no movement at all is where the American borrowers use the money or credits put at their disposal in buying once for all British goods in Great Britain. It is conceivable, for example, that they are railway promoters who use the entire proceeds of the loan in Great Britain for buying rails, locomotives, bridge material, and the like. Then there will be no remittances at all from Great Britain and the United States. English commodities will go to the United States as the direct result of the transaction; foreign exchange will not be affected at all.

This sort of consequence — an immediate export of goods from the lending country — may ensue as the result either of those ordinary economic forces in which deliberate diversion of international trade plays no part, or of some conscious and deliberate policy. In modern times, and during the last decade or two on a considerable scale, there has been much deliberate endeavor in the lending countries to link loans directly with commodity exports. This has been particularly the case in France and Germany. It has been the undisguised policy of the governments in both countries, and of the great financial institutions and promoters who have been in close touch with the governments, to arrange the terms of foreign loans in such way that the borrowers shall spend at least a part of the proceeds in France or in Germany. The bankers are often representatives also of manufacturing enterprises for whose output they wish to secure a market. The governments are fairly obsessed with a determination to promote exports in every possible way — one form of that

the metal, but the cessation of exports of it that would otherwise have taken place. The conversant reader need not be told that in any endeavor to interpret the actual course of the international trade of the United States, account must be taken of the conditions which may lead to the retention in our own circulation of the domestic output of gold.

almost universal spirit of neo-mercantilism which amazes the philosophic observer. Obviously, where the loans are made not strictly for industrial purposes, but for military or naval equipment, the combination of political and economic motives acts even more strongly to link foreign loans with commodity exports. In the case of Great Britain this sort of deliberate manipulation has not played so conspicuous a part. Great Britain has been a cheap place in which to buy industrial equipment, and as a rule borrowers, when they have used their funds for buying British commodities, have done so without pressure, simply because they found it pecuniarily advantageous to do so.

In all such cases, the effect of international borrowing becomes direct. The merchandise movement and the balance of trade are affected at once. Merchandise exports from Great Britain exceed merchandise imports without any intermediate stage of disturbance of the foreign exchanges, and without any flow of specie and readjustment of prices. The balance of trade becomes at once "favorable" to the lending country, and " unfavorable " for the borrowing country.

But it is extremely rare that the purchase of goods in the lending countries by the selfsame foreigners who contracted the loan takes place to such an extent as to obviate completely the flow of specie. (We are still sidering, be it remembered, what happens if both countries are on a gold basis.) Not the entire proceeds of loans are likely to be spent in this way; only some fraction. Even if railway promoters from the United States, or Canada, or Argentina, who borrow in England, also buy in England railway material, they are likely to use in this way only a part of the funds. Something they must spend at home, for labor, for miscellaneous supplies, divers expenses. It is conceivable, of course, nay probable, that they will raise some portion of their capital at home, and only the residue abroad; such at least is likely to be the case in a country like the United States. And it is then conceivable that they will use for domestic expenditures the funds raised at home, and will use the proceeds of foreign loans entirely for purchase abroad. But it is most improbable that an exact balance of this sort will be struck, even when there is a division between foreign and domestic financing. In the immense majority of cases a part of the foreign funds, and usually a considerable part, will be wanted for expenditure in the borrowing country itself. Then, to repeat, under a gold régime, the outcome must be a flow of specie from the lending to the borrowing country. Remittances will have to be made in our supposed case from London to New York; and the foreign exchanges will be affected in the manner described.

Continuing now the analysis of the chain of operations under a specie régime, it is obvious that the increase in remittances from London to New York will cause a demand for New York exchange in London. New York exchange will rise in London, sterling exchange will fall in New York. But in this situation — both countries on a gold basis — the fluctuations in foreign exchange will necessarily be confined within the gold points. Specie will flow from London to New York. Then will follow that train of consequences familiar to the reader of Ricardo and Mill. Prices will fall in Great Britain and will rise in the United States. With the fall in English prices the export of commodities from England will be stimulated, and more of them will go to the United States. With the rise in American prices exports from the United States will be discouraged, and imports correspondingly stimulated. These diverging movements — a general fall of prices and money incomes in Great Britain, and a general rise of prices and money in the United States — will continue until an excess of commodity exports from Great Britain develops to such an extent as to meet the obligations which the English borrowers have assumed for making remittances to the United States. Then the money value of the excess of exports from Great Britain will be precisely equal to the remittances to be made from London to New York. The English balance of trade will be "favorable"; the American balance of trade "unfavorable." The balance of international *payments* will be completely adjusted; exchange in London and New York will again be at par.

Still another consequence, familiar in the orthodox analysis, should be recalled. The outcome of the whole series of changes is advantageous to the people of the United States, in that they get all imported commodities on better terms than before. Their money incomes have risen; the prices of imported commodities have fallen; as buyers of imported commodities they gain. And the converse, of course, happens in Great Britain. Money incomes and general prices have fallen, whereas the prices of commodities brought in from the United States have risen. As purchasers of American commodities, the British are less well off than before. All this is in accord with the theorem that the apportionment of the potential gain from international trade between the trading countries depends on the so-called conditions of reciprocal demand. The people of Great Britain are called upon, or rather have undertaken, to make greater remittances to the United States than before, and in order to induce the people of the United States to purchase a greater quantity of commodities, must offer them on cheaper terms. Precisely the same set of consequences would ensue if we were to assume, not international borrowing, but a mere change in the conditions of demand. If the people of Great Britain were to demand more of American wheat or American cotton than before — if their demand curve for these commodities were to shift to the right — precisely the same changes would ensue. And the outcome would be of the same kind, if Great Britain were called upon to make a remittance to the United States for any cause whatever — tourists' expenses, the payment of a war indemnity, a new American article of export.

Nothing of this sort, however, can take place — at least, it cannot take place through the operation of the same mechanism — if the countries have different currencies. Specie could not flow, for example, from Great Britain to the United States between 1862 and 1879. If it did move, it would be simply as a commodity. Gold sent from Great Britain to the United States could not enter circulation, but would be bought for use in the arts, or for sporadic payments stipulated to be made in specie. Its influx could not affect general prices. And yet we must expect that the same general cause would have the same general effect under a paper régime. Any circumstance bringing about additional remittances from Great Britain to the United States, must presumably have effects of the same kind on the terms of commodity exchange. How can the same general tendencies and general consequences appear, without the mechanism through which alone they are under normal circumstances brought about?

We have seen that the first effect of the borrowing operation — the effect during the stage of transition — is that exporting industries in the United States are comparatively unprosperous, having a range of prices for their products lower than the general price level. In other words, exporting industries decline; or perhaps (quite as probable) they simply remain at a standstill, not responding to the growth of population and trade in the same degree as other industries. Less commodities are exported. More domestic commodities are made, or a larger share of an exportable commodity is used and bought at home. More commodities are poured into the trading mechanism of the country. And more of imported commodities also come in; since, as we have seen, the proximate effect has been to encourage importation. All told, the total volume of commodities which are bought and sold in the United States increases. The change takes place by a diminution in the exported commodities, and an increase in the physical quantities of imported commodities as well as of commodities previously exported and now consumed at home.

Note now the peculiarities of this situation. There are more commodities than before; there is no more money. (We still assume that the depreciated paper remains unchanged in quantity; in other words, abstract from the disturbing influence of further inflation or of contraction.) Then necessarily domestic prices are lower. This seems directly contrary to the theoretical analysis of the same case under a specie régime; for under a specie régime the assumed conditions will cause domestic prices to rise in the United States. Observe, however, more closely. Prices indeed are falling in the United States; but money incomes are *not* falling. The collective money income of the people of the United States is no less than it was before, being simply the resultant of a stationary supply of money. The people of the United States gain, not indeed through having higher money incomes, but through the circumstance that their money incomes remain the same and that commodities are cheaper than before.

And they gain not only as purchasers of imported commodities (this being the only gain which they would have secured under a specie régime); they gain also as purchasers of domestic commodities. In one essential respect their situation is the same as it would be under a specie régime. They are sending to foreign countries fewer commodities; their exports are less in quantity. And they are receiving from foreign countries more of imports; their imports are greater in quantity. In terms of commodities, international trade has come to be more to their advantage under a paper régime, precisely as it would have been under a specie régime. The barter — the fundamental exchange — is more advantageous to them. But the mechanism by which they secure the advantage is peculiar. The process works out under a paper régime, not by their having larger money incomes and lower prices of some commodities (those imported), but by their having the *same* money incomes, and lower prices not only of imported commodities but of domestic commodities as well.

Turn now to Great Britain. It would be superfluous to set forth the trend of events in that country with the same detail. Precisely the converse takes place. The exporting industries in Great Britain are prosperous, and capital and labor drift toward them. More commodities are made for export, and more are sent out. The importers, on the other hand, are not prosperous; less commodities are coming into the country. Money incomes remain the same. There is no flow of specie into Great Britain or out of Great Britain. But with the same quantity of money, and with less commodities in circulation, prices rise in Great Britain. Money incomes, however, remain the same. The people of Great Britain lose as consumers of the imported goods, now more expensive; and, they lose also as purchasers of their own goods, which become somewhat higher in price, but for whose purchase they have only the same money incomes.[1]

It would seem, therefore, that the same fundamental consequences ensue under paper money as under specie, but with some striking differences. The particular factor which was isolated — loans occasioning larger remittances to the United States — causes the people of that country to gain as consumers; they gain in their commodity incomes. The people of Great Britain lose as consumers. This much is to be expected, or at least is in accord with the theoretical analysis of the same conditions of trade under identical currency bases. But the course of prices in the trading countries is precisely the opposite from that which we should expect under specie conditions. The borrowing country, the United States, which under a specie régime would experience rising money prices and rising incomes, has instead a lower range of prices, tho with stationary money incomes. Great Britain, on the other hand, should under normal conditions have lower prices and lower money incomes; yet the foregoing analysis leads one to predict higher prices with stationary incomes.

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[1] Obviously, as regards the gold country, this series of consequences would extend before long beyond its own boundaries. All gold countries would be affected; some international redistribution of gold would take place, and the rise in prices equalized (or rather apportioned) between them all. In the country of paper money, however, the effect, being necessarily confined within that country's limits, would not thus be spread out. One might expect therefore that, tho doubtless too slight to be detected in the gold countries, it might be at least observed, conceivably even measured, in the paper country. But, as will presently be explained, even here direct verification of the reasoning is not likely to be secured; not only because of the crudity of our statistical material on prices, but also because of the confusing effects of other causes sure to be in operation at the same time.

III

All this may seem very much in the air. Indeed, it does belong in the higher and more attenuated regions of theoretic speculation. It is the sort of thing which many contemporary economists believe to be no better than an intellectual plaything — refined reasoning of a most abstract character, quite impossible to connect with the realities of industry and commerce. And the most ardent devotee of economic theory must admit that such consequences as have been set forth in the preceding paragraphs, and especially those about the eventual course of prices and incomes, represent the operations of very long-time forces. Obviously they all rest upon the "quantity theory" of money, or at least upon the proposition that an increase or decrease in the quantity of money is followed by a rise or fall in prices. It is not indeed material for the argument whether one holds the quantity doctrine in uncompromising form, or holds a carefully qualified version of it, or rejects it altogether. There is agreement on all hands, I believe, that an increase in the money supply is accompanied, "other things equal," by a higher range of prices, and an increase in "transactions," similarly standing by itself, by lower prices. No more need be assumed for the present purpose; the nature of the causal connection need not be discussed. Whatever it be, every one admits that the movement toward higher prices is often slow to appear, difficult to observe. Allowance must be made for credit, banking operations, changes in the ways of effecting payments, coincident changes in the volume of goods, and the like. Much more time is required for a rise in prices due to greater supply of money, or less supply of goods, than the older economists assumed. During the long period of slow spread of the influence and all-around readjustment of prices and incomes, other forces are certain also to come into play. The prolonged and undisturbed operation of a single factor or train of factors, of the kind here under review, is most unlikely to appear in the actual world. The problem seems to be susceptible only of hypothetical solution. It is a matter of "pure theory."

And yet verification, difficult as it is, must be attempted for this analysis, as for every other. The economist, tho compelled to resort to deductive reasoning, must strive always to confirm and correct his reasoning by ascertaining how far it is in accord with the concrete industrial phenomena. Complete verification, however, is rarely possible. It cannot happen that the industrial and monetary situation of any country shall remain undisturbed, except for the one train of influences assumed, during a period long enough for the working out of the deduced consequences. Moreover, it is almost certain that the particular factor here analyzed — a change in the balance of payments — will be of less quantitative importance than others simultaneously in operation. In any event it will be so covered up and concealed by the others as to make impossible the delimitation of its separate effect. Similarly, the working of an inconvertible paper currency is susceptible of isolation and of specific observation only in the rarest of cases. No experiment in the use of inconvertible money is ever allowed to work itself out undisturbed; a fiat money situation is almost of necessity unsettled. Exact and conclusive verification of theoretic reasoning about it is impossible.

Most of all is verification unattainable with regard to the reasoning about the ultimate outcome — the peculiar changes to which attention has been directed in the relative price levels and income levels of the trading countries, and in the terms of commodity exchange between them. Rarified analysis of this kind seems peculiarly open to the charge of being only an intellectual plaything. There is justification for the repugnance shown to it by the economists of the historical and descriptive school. Like mathematical treatment of economic doctrines, it appeals to the analytical and ratiocinative mind, but repels the person whose concern is with the world of history and of affairs. Its validity can rarely be tested by direct appeal to the facts.

The possibilities are different, however, as regards the phenomena of what has been described as the transition period — the movements of foreign exchange and of the specie premium, and the course of imports and exports, during the period immediately succeeding a particular change in the balance of payments. Here it would seem feasible to ascertain what in fact happens, and to observe whether the course of events accords with theoretical deduction. True, more than one influence may be at work at any particular time. At the very moment when borrowing operations take place, there may be also changes in monetary legislation and general monetary conditions in the country having paper money; or there may be changes in the other items of international payments, such as those for tourists' remittances or, indeed, for current merchandise exports and imports. On the other hand it may happen that international borrowing takes place upon so large a scale and for so considerable a period as to be the controlling factor. Such, for instance, has been the case more than once in the relations between Argentina and Great Britain. Such seems also to have been the case in the relations between the United States and Great Britain during the years preceding the crisis of

1873. Both in Argentina and in the United States, it will be recalled, the operations took place under paper money conditions. Moreover, they were confined in the main to borrowing in a single country, Great Britain. It would seem not a hopeless task to trace the actual course of events in borrowing and lending countries during at least the first stage, and to ascertain how far it is in accord with theoretical expectation.

This sort of partial verification, moreover, has an importance beyond its immediate range. If it appears that the phenomena, so far as we are able to trace them in detail, conform to theoretical expectation, we may feel some confidence that the same conformity exists even where they are so overlaid and confused that it is impossible to follow them one by one. Precisely such partial verification is important in many fields of economic inquiry. We must often be satisfied if we can perceive fragments or occasional connected items that have significance. Our situation is like that of the geologist or palaeontologist who discerns scattered bits of evidence, pieces them with unseen but presumptive connecting links, and so finds sufficient confirmation of a prolonged and refined train of reasoning. Or, to use a simile applicable to the methods both of economics and geology, the inquirer is in the position of one tracing a thread through a complicated web. It appears and disappears, yet shows itself repeatedly as anticipated, conforming to a suspected plan and pattern; and we are convinced that it runs through the web, even tho invisible for long stretches. Partial verification, significant and not disconnected, serves to strengthen our confidence in the validity of reasoning quite insusceptible of verification in every detail.

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THE REGULATION OF WAGES IN NEW ZEALAND

SUMMARY

Introduction: the New Zealand system not what it was intended to be, 405. — I. A court of arbitration, unlike a board of conciliation, must follow guiding principles, 407. — The New Zealand judges hesitate to state principles, 407. — Early cases, 407. — II. Existing conditions and prosperity of the industries the basis for several years, 409. — Yet a general tendency to raise wages, 415. — Cost of living little considered, 416. — III. As time went on, more emphasis on cost of living, 417. — Statistics until 1907 inconclusive, 420. — Fragmentary evidence not accepted, 422. — Informal statements by the Court of the principles followed, 426. — IV. Beginning in 1912, higher wages awarded to common laborers, 428. — A policy on minimum wages announced, 431. — V. Index numbers of prices published in 1911–14, 434. — Wages advanced as much as cost of living, 438. — VI. Change of personnel in 1913 but no change of policy, 439. — Lowest-paid workers granted some increase, 442. — No regard paid to great advance in cost of living in 1914–15, 443. — VII. Conclusion, 445.

PROBABLY no one of the members of the New Zealand Parliament who voted for the Industrial Conciliation and Arbitration Act, 1894 imagined that by so doing he was voting to take away from employers and employees the power to contract freely in their industrial relations. Nothing in the discussions in Parliament indicates that this was the intention of the framer of the measure or of its supporters. One of the latter, Mr. John Macgregor, probably one of the best-informed men in Parliament at that time, said, six years after the passage of the Act, that he was

> driven by candour to admit that the system is not in any sense what it purports, and was intended to be — a means of settling industrial disputes and strikes by conciliation and arbitration — but is rather

a system for the regulation of the industries of the Colony by means of ordinances (misnamed " awards ") issued by a court of law.[1]

To say that the system of compulsory arbitration is not what it was intended to be is not to condemn it, as Mr. Macgregor admits.[2] We must study the actual workings of the system, see what it has accomplished and decide whether these results, however unexpected they have been, are worth the cost of the undertaking; measuring costs, not in money alone, but also in the effects which judicial interference has shown on industrial and social welfare.

No subject with which the boards or councils of conciliation or the court of arbitration has had to deal is so important as that of wages. Nothing is so likely to cause a strike or a lock-out as a disagreement between employees and their employer over the wages which are to be paid and the mode and time of payment. To prevent strikes or lock-outs the court has had to fix such wages in the different industries or industrial establishments as would, in its judgment, do justice to both employers and employees and thus avoid the necessity of an appeal to these crude modes of settlement. Hence the judicial regulation of wages has come to be the most important feature of the compulsory arbitration system.

I

If wages are to be regulated by the courts under the arbitration system, it becomes a matter of fundamental importance to know what principle or theory of wages will be adopted by the judges who make the regulations.

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[1] J. Macgregor, Industrial Arbitration in New Zealand, Dunedin, 1903, prefatory note.

[2] Ibid., p. 9. " I do not say the act has been a failure. What I do say is that, if it is a success, it is not as that which it was intended to be, but as something quite different.

Will the competitive principle of fixing the price of labor according to the number of laborers in any given occupation and the demand for their services be adopted? Will the principle of collective bargaining be recognized and an effort made to take into account the strength of the opposing forces? Will the needs of the industry or the needs of the workers be made paramount?

The original act was silent in regard to the principle of wage payment and could therefore afford no guidance in this matter to either the boards or the court. Wages are merely mentioned in section 2 as one of the "industrial matters" which might be made a subject of an industrial agreement between employers and employees or which, in the absence of such an agreement, might give rise to an industrial dispute to be heard, on application, by a board of conciliation or by the court of arbitration.

It may be said, in passing, that when an industrial dispute is heard by a board or council of conciliation, there is no need of a statement of the principle on which wages are to be fixed. The conciliation method is by its very nature a give-and-take method. Any attempt to lay down a principle to be followed by the participants in conciliation in reference to wages or any other matter coming before them would defeat the very purpose of these conferences. Since conciliation implies an ultimate agreement between parties hitherto unable to agree, it is important that every opportunity be afforded for them to compromise their differences. Such a compromise would be unlikely if the disputants had to make a wage agreement on the basis of some principle not acceptable to both parties. In the New Zealand conciliation councils, as in the Australian wages boards, wages are adjusted in accordance with no set principle. Both sides make use of such arguments for or against an increase of wages as are likely, under the circumstances, to carry weight with their opponents, and nothing is conceded by either side which is not necessary to prevent the conference from being a failure.

A court of arbitration, on the other hand, finds the need of some guiding principle when it faces the task of fixing the rate of wages in an industry or occupation in such a way as to avoid the necessity of a strike. Finding no guidance in the words of the statute, the New Zealand judges, as well as those in Australia, have had to decide for themselves the principle which they would follow. The Australian judges have usually stated definitely the principle which they intended to follow and have discussed their reason for adopting it with much fulness. In the published awards of the New Zealand Arbitration Court, on the other hand, we find little discussion of the basic principles of the award. Pioneers in a new field of industrial regulation, the New Zealand judges have proceeded with caution and, mindful of the effects which their awards would have upon the conduct of industry, have hesitated to announce the adoption of a principle of wage payment which later experience would prove unwise or impracticable.

In the very first cases heard by the New Zealand Court no statement was made as to the principle which was being followed, but the Court limited itself to the establishment of a minimum wage for workers in the industry as a whole or, more likely, a minimum which varied according to the occupation or to the nature of the work to be performed. This practice received legislative approval in 1898 when, by an amendment to the Arbitration Act, Parliament authorized the Court to "prescribe a minimum rate of wages or other remuneration, with special provisions for a lower rate being fixed in the case of any worker who is unable to earn the prescribed minimum."

The practice of the Court in establishing this minimum wage does not appear to have been uniform in the early cases decided. Mr. Broadhead says: "Some of the questions put by the members of the Court to witnesses would appear to show that the minimum wage is, sometimes at any rate, fixed according to what is reckoned as the average wage ruling in the trade."[1] In the case of the Canterbury bootmakers, heard and decided in 1896, the Court accepted a schedule of wages and piece rates contained in a tentative industrial agreement drawn up by the employers and employees. Furthermore, it created a general board of conciliation, composed of employers and employees in the trade, to meet annually for the purpose of dealing with all questions of wages, which was directly authorized "to alter the amount of the minimum wage."[2] Local boards of conciliation in this industry were also provided for "to arrange all matters of wages not already provided for by the general board." The plan adopted in this case, of referring questions of wages to private boards of conciliation, was not allowed to become a precedent, however. In fact, the Court soon modified this very award by abolishing the private boards.[3] Since then the Court has itself prescribed the minimum wage to be paid, altho in those cases where an elaborate schedule of piece rates had to be prepared it has usually asked the assistance of a committee of employers and employees in the trade.

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[1] Broadhead, State Regulation of Labour in New Zealand, Christchurch, 1908, p. 57.

[2] Awards, Recommendations, Agreements, etc., made under the Industrial Conciliation and Arbitration Act of New Zealand, vol. i, p. 205.

[3] Clark, "Labor Conditions in New Zealand," Bulletin of the United States Bureau of Labor, No. 49 (November, 1903), vol. viii, p. 1205.

II

In the absence of any clear enunciation of the principle which guided the Court in the determination of the minimum wage during the early years, we may say that a study of the awards themselves and especially of the brief comments which sometimes accompany them indicates that for several years the Court was chiefly concerned with the problem of preserving the existing industrial conditions in the Colony and was unwilling to allow such changes in wage rates as would tend to embarrass employers in the conduct of their businesses. Indeed, this was practically so stated by Mr. Justice Williams, the first president of the Arbitration Court, who wrote to the London *Times*, as follows:

> The duty of the Court is to pronounce such an award as will enable the particular trade to be carried on, and not to impose such conditions as would make it better for the employer to close his works or for the workmen to cease working, than to conform to them.[1]

It was doubtless in line with this policy that the Court decided, in 1896, in a gold-mining case where the operators had reduced wages, that while the reduction of wages was premature, "looking to the large amount of money that was being expended by the Consolidated Goldfields Company in prospecting and opening up new ground (these being non-paying operations) the miners should consent to take a lower wage for a limited period, after which it should be permitted to reopen the whole question."[2] When, on the expiration of the period stated, the question of wages was reopened, altho a more detailed schedule of wages was adopted by the Court, no advance in wages was allowed to the class of workers dealt with in the earlier case.[3]

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[1] Quoted by Broadhead, op. cit., p. 57.

[2] Awards, etc., vol. i, p. 176.

[3] Ibid., p. 183.

Of a similar tenor was the decision of the Court in an important case heard in 1901, which affected the entire Thames gold-mining district. In announcing the decision of the Court not to allow any advance in the wages paid, the President of the Court (Mr. Justice Cooper) said:

> We are satisfied that the gold-mining industry in this industrial district is, notwithstanding an increased output of gold from the Waihi mine, in a languishing and depressed condition. . . . The Court is not, in our opinion, justified in so increasing the rate of wages as to destroy, or in a great measure cripple, an industry upon which so many workers now depend for their livelihood and in which so many individuals have invested their money.[1]

The workers had urged an increase in the cost of living as a reason why higher wages should be paid, but the Court found that while some articles had increased in price during the preceding eighteen months, the evidence submitted seemed to point to the conclusion that, on the whole, the cost of living was substantially the same as it had been eighteen months before.

The emphasis placed upon considerations affecting the prosperity of the industry was not confined to mining. In several cases dealing with manufacturing industries which were heard by the Court in 1902 the same attitude was taken as that shown above. In the case of the Auckland Iron and Brass Moulders the Court refused an increase in the minimum wage (1*s.* 1½*d.* per hour) fixed by an award made in 1899. The President (Cooper) said:

> At the hearing before us, it was clearly proved that the condition of the trade at present was no better than it was in July, 1899. Indeed, the effect of the evidence is to satisfy us that the trade is, if anything, in a less prosperous condition than it was then. The union has, therefore, failed to establish a case justifying the Court in increasing the minimum wage fixed in 1899.[2]

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[1] Awards, etc., vol. iii, p. 24.

[2] Ibid., p. 80.

In the case of the Wellington bookbinders the Court called attention to the low margin on which the employers were operating, owing to importations, and said:

> We have felt that any material additional burden or restriction placed upon manufacturers here will imperil the industry altogether, and that the effect will be not to give more work to local journeymen at higher wages, but to compel additional importations, and to go far to destroy an industry which at the present time affords employment to a considerable number of workers who are not technically journeymen.[1]

Outside competition was also found to prevail in the cycle manufacture and the Court said it was obliged to take it into consideration "in fixing the minimum wage of adult workers and in considering the employment and apprenticeship of youths."[2]

The case, however, which, better than any other, illustrates the consideration which the Court gave, during the early years, to the interests of the employers is that of the Canterbury Woolen Mills' Employees, in which an award was made in 1902. The workers asked the Court to substitute for the existing piece-rate system a system of weekly wages at certain rates stated in their petition. After calling attention to the fact that such a change would involve an increase of wages to the amount of £11,000 on an existing pay-roll of £25,000 per annum, the Court said that a careful examination of the wage sheets, the conditions of work and the earnings of the piece workers had satisfied it that

> no real cause for complaint exists and that these workers are well treated and well paid under the present system. . . . In dealing with an industry of this description we have to consider the interests of the industry as a whole. It it is to be successfully conducted,

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[1] Awards, etc., vol. iii, p. 349. Cf. Clark, op. cit., p. 1239.

[2] Awards, etc., vol. iii, p. 554.

> reasonable provision has to be made for the maintenance of the machinery and plant under everchanging conditions, and while it is the duty of the Court to see that the workers are reasonably and fairly paid for their labor, the Court has also a duty to perform to the employer, and to see that the conditions imposed are not such as to seriously imperil the existence of the industry, and so produce results which would be disastrous to the employers, to the workers and to the district. Being satisfied, therefore, that the workers generally are fairly paid under the present piece-work rates and conditions, it is the duty of the Court to maintain as far as possible the present conditions. And in this present dispute the Court must take into consideration the fact that the production of these mills have to be sold in competition with those of the other woolen mills in the other industrial districts. No dispute exists in reference to these mills, nor has the Court any power to make one award applying to the mills in the other parts of the Colony. It would be manifestly unjust for the Court to impose conditions on the Canterbury mills which would seriously hamper their business and power to fairly compete with the other woolen mills in the Colony.[1]

The inclination of the Court in its earlier decisions to emphasize the lack of prosperity of an industry whenever it refused an increase of wages led the workers, not unnaturally, to believe that the profits being obtained by certain establishments might properly be urged as a reason why increases of wages should be allowed. Mr. Justice Cooper, the judge who made most use of the prosperity-of-the-industry argument, unwittingly lent color to this belief by a statement made by him in connection with a hearing of the Tanners' and Fellmongers' dispute at Christchurch in 1901. He said to the employers: "It is quite clear that a good deal of the information upon which the union must necessarily rely to base a claim for higher wages is in possession of the other side, and that is the profits you are making on your business."[2]

This statement was followed by a request that the employers furnish him with copies of their balance-sheets or other information necessary to enable the Court to tell what profits they were making. It does not appear, however, that any use was made of this information or that the books were actually called for and inspected.[1]

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[1] Awards, etc., vol. iii, p. 507.

[2] Broadhead, op. cit., p. 58.

Any expectation that the workers may have had that under the Court's interpretation of the purposes of the act they might expect to share in the profits of successful concerns was doomed to disappointment. It was Mr. Justice Cooper himself who first repudiated such an interpretation of his own decisions. In the Thames gold-mining dispute, already referred to, the miners employed by the Waihi mining companies claimed an increase of wages on the basis of the large profits being obtained by those companies. The Court held the reason given to be insufficient and said:

> The fact that two or three companies in the district are obtaining good returns and, therefore, that the rate of wages should be based upon the profits made by the companies, affords, in our opinion, no sound reason for fixing a high rate of wages in a district where the great majority of mines are not obtaining payable returns.[2]

Much criticism of this award was expressed by the workers and their sympathizers, but even more dissatisfaction was felt concerning a similar decision rendered in 1906 in a case brought by the Dunedin seamen against their employer, the Union Steamship Company of New Zealand. This company and other New Zealand shipping companies had, in 1893, reduced the wages of their seamen ten shillings per month, owing to the bad times. Ever since that time the employees had been endeavoring, without success, to have their wages restored to the old level. Failing to secure the increase by the voluntary action of the company they had recourse to the Arbitration Court. As the case was presented to the Court, much emphasis was placed, by the employees, on the prosperity of the Union Company. In rendering a decision adverse to the claim of the employees, Mr. Justice Chapman said:

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[1] Broadhead, op. cit., pp. 58–59.

[2] Awards, etc., vol. iii, p. 25. In 1907 the Court allowed an increase of wages to workers employed in the Waihi mines (ibid., vol. viii, p. 199). This was one of the first cases heard by Mr. Justice Sim after he became President of the Court. Mr. Brown, the employers' representative in the Court, protested against allowing an advance in wages, quoting the above statement by Mr. Justice Cooper as a sufficient reason why no advance should be made. He further stated that in order to make out a case before the Court the industrial union of workers which had been defeated in the former case had now split into two unions. "The effect of this division," he said, "was to enable them to single out practically the only dividend-paying company in the district" (ibid., p. 384).

> The majority of the Court do not think that any substantially different circumstances are shown to have arisen since the last award, justifying an increase of wages. Evidence was given as to the prosperity of the Union Steamship Company, the chief employer in the Colony. Such evidence is usually admitted by the Court as part of the general inquiry, but the Court does not settle the wages on a profit-sharing basis, as that might, in many industries, involve the necessity of fixing a differential rate as between employers, and would certainly lead to confusion.[1]

The disappointment felt by the seamen over this award and the opinion of the Court was shared by many others. Even the Secretary of Labour, Mr. Edward Tregear, felt warranted in making it the subject of comment in his next annual report. He said: "The sailors took the view that if they did not get an increase during days of prosperity, but only suffered reductions in hard times, the position was unfair."[2]

A perusal of the above quotations from the opinions of the Arbitration Court, giving reasons for refusing increases of wages on the ground that the prosperity of the industries concerned did not warrant such increases, would naturally lead the reader to suppose that during the early years of the enforcement of the Conciliation and Arbitration Act, increases of wages were generally refused by the Court. Such a conclusion, however, would be erroneous. The general tendency during the early years of the Act was to advance wages and this tendency is noticeable in the awards of the Arbitration Court as well as in the findings of the boards of conciliation.

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[1] Awards, etc., vol. vii, p. 60.

[2] Report of the New Zealand Department of Labour, 1906, p. vi.

Mr. Ernest Aves, reviewing the operation of the Act for the first twelve years of its history, in his report to the British government, gives a list of sixty-four cases in which more than one award had been made in the same trade and in which increased wages or shorter hours (generally) had been allowed. On the other hand, there were only forty-nine cases in which more than one award had been made and in which wages and hours had been left unaltered.[1] "In the whole series of awards," he goes on to say, "there has been only one insignificant case where wages have been reduced, and two where hours have been increased."[2] Altho the advances made by the Court in those cases where an increase of wages was allowed were in most cases not considerable, they, nevertheless, do relieve the Court from the imputation that during the early years of its existence, the workers who applied to the Court for an improvement in their situation generally went away empty-handed. In addition to the cases enumerated by Mr. Aves where more than one award had been made by the Court, he reported that, up to March 31, 1907, there were one hundred and fifteen cases in which only one award had been made.[3] It is, doubtless, well within the truth to say that in the majority of these cases the minimum wage fixed by the Court was some-

[1] Report to the Secretary of State for the Home Department on the Wages Boards and Industrial Conciliation and Arbitration Acts of Australia and New Zealand, London, 1908, pp. 94–98.

[2] Ibid., p. 99.

[3] Ibid., p. 98.

what above that which some of the workers in the trade in question had been receiving.

Altho the early decisions of the Court of Arbitration granting increases in wages seldom state the reasons which impelled the Court in allowing the increases, the period was one of slowly rising prices and it soon became evident to the workers that arguments based on the increased cost of living were most likely to carry weight with the Court. Perhaps such arguments exercised more influence than the facts warranted, for, as we shall later see, the increase in the cost of living was much less in New Zealand than in other parts of the world; but the statistics which showed this to be so had not yet been collected and tabulated, and popular opinion was influenced by reports from Europe and America.

The Court of Arbitration in New Zealand has never directly declared it to be its intention to measure the wages by the cost of living of the workers. The purpose of the Conciliation and Arbitration Act was to prevent strikes, not, as in the case of the wages boards' legislation of Australia, to prevent "sweating." The first workers to take advantage of this Act were, therefore, not those in the unorganized and poorly paid trades but those already organized in strong trade unions. It was not to be supposed that the disputes originated by this class of workers and carried to the Court of Arbitration would have to do with wages insufficient to cover the cost of subsistence. An award of the Court which allowed wages only sufficient to cover the cost of living would not serve to settle a dispute between a well-organized union of skilled workers and their employers; and therefore in the early awards made by the Court no effort was made to establish a standard minimum wage based on the cost of living to the unskilled worker. The principle which governed the

Court, says Dr. Clark, was "to include in the award such terms as would probably have been included in a collective bargain between the parties thereto in case they had come to an extra-judicial agreement." Such a wage was fixed as would be, in the opinion of the Court, "a fair wage, or a ruling wage in the locality in which the decision applies."[1]

III

As time went on, several considerations led the Court of Arbitration in New Zealand to place more emphasis upon the cost of living as a standard by which to measure changes in the minimum wage established by the Court.

1. Applications for awards became more numerous from industrial unions representing less highly skilled and poorer paid workers. While the minimum wage in the case of the highly skilled workers bore no obvious relation to the cost of living of the workers, for the unskilled and for women workers it would be the duty of the Court to see that the minimum wage established by the Court was high enough to enable the worker to maintain a decent standard of living.

2. As most of the applications for awards came from the workers' unions and as a demand for an increase of wages was invariably a part of such applications, the Court naturally threw upon the applicants the burden of showing that an increase was necessary. This was especially true in the case of second or subsequent awards made by the Court to the same group of workers. When the Court has once made an award, fixing the minimum rate of wages for a given trade, and the workers, upon the expiration of that award, ask for an

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[1] Clark, op. cit., p. 1205.

increase of wages, it is natural that the Court should demand the reason for altering the minimum wage. It is equally natural that in a period of rising prices the workers should plead an increase in the cost of living as a reason for their demands and if they are able to show that an increase in house rents and in the prices of such commodities as are usually purchased by them has taken place since the last award was made, it will be very difficult for employers to make a successful resistance before the Court to the demand on the part of their employees for an increase in the minimum wage.

3. Cost of living was early made use of by judges of Australian courts of arbitration as a basis for the minimum wage. Altho New Zealand judges were in no way bound to follow these precedents, the arguments by which the Australian judges defended their awards, especially the argument of Mr. Justice Higgins of the Commonwealth Arbitration Court in the Harvester case,[1] in which he laid down the principle that a fair and reasonable wage was one which provided for " the normal needs of the average employee, regarded as a human being living in a civilized community," were widely quoted in New Zealand and undoubtedly exercised influence in the Arbitration Court.

Altho cost of living may have been one of the factors involved in the wage determinations of the earliest awards, it is first mentioned in connection with an award made as late as 1902. The case was that of the Auckland carters and it was Mr. Justice Cooper who rendered the decision. He said:

> In fixing the minimum (wage) we have had regard to the cost of living in Auckland, the nature of the work to be performed for the wages fixed, and the rates already fixed in other centers. We believe

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[1] Ex parte H. V. McCay, 2 Commonwealth Arbitration Reports, p. 1.

> that the rates we have settled for Auckland are, compared with the cost of living in the cities of Wellington and Dunedin, where awards have already been made, fair and reasonable and justified by the evidence adduced before us in the case.[1]

The extent to which the Court would go in requiring proof of an increase in the cost of living of the workers before it would allow an increase of wages is well brought out in a decision made in 1905 after hearing a dispute brought by the miners of the Westland district. On this occasion, Mr. Justice Chapman, the President of the Court said:

> In the latest awards made by the Court it has refused either to increase or decrease the wages on the evidence then brought forward. We have been asked to deal with the question upon evidence put forward by the various parties. As to this evidence it is sufficient for present purposes to say that it did not tend to show a general increase in the cost of living during the last few years, and in this respect it stands in marked contrast with evidence which we have received in other parts of New Zealand. At Reefton it was shown that there is no increase either in house-rent or board. In the case of the coal mines, we do not think that the evidence tended to show that the established tonnage rates lead to substantially different results in the way of remuneration from those which the Court had before it in making the former awards.[2]

The reference in the above quotation to the unsatisfactory evidence which laborers were likely to offer to the Court to show that there had been an increase in the cost of living clearly indicates one reason why the New Zealand Court of Arbitration, during the early years of its existence, placed so little emphasis on cost of living as a principle for determining the minimum wage. The evidence offered by the workers was for the most part personal — price quotations made from memory relative to the commodities which they had purchased or the rents paid for their houses. Such evidence could easily be matched by employers quoting instances of reductions which had taken place in prices and rents, so that, as more than one judge remarked, the evidence, taken *in toto*, tended to furnish no proof as to what changes, if any, had taken place in the cost of living.

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[1] Awards, etc., vol. iii, p. 82.

[2] Ibid., vol. vi, p. 33.

The New Zealand government made no extended study of the cost of living until 1912. But after the census of 1906 was taken, a comparison was made of the changes in wages and of changes in the prices of food since 1895, the year the Industrial Conciliation and Arbitration Act went into effect. The year 1906 was made the basis of the index numbers used. Later the figures were made to include the year 1907. The index numbers were as follows: [1]

Year	Wages	Prices of Food
1895	84.8	84.3
1896	84.3	86.1
1897	84.6	86.1
1898	88.7	87.4
1899	88.0	83.6
1900	90.4	86.0
1901	89.7	89.6
1902	93.4	105.6
1903	96.5	100.5
1904	98.6	98.5
1905	98.0	102.0
1906	100.0	100.0
1907	104.9	103.3

Except for a general upward tendency on the part of both wages and prices, it cannot be said that these figures indicate that any close relationship existed between wages and prices in New Zealand during these years. The fluctuations in one column seem to be independent of those in the other. It is probably true, however, that, taking the period as a whole, wages kept pace with prices of food better in New Zealand than they did in Europe and America. It is doubtful, however, whether the awards of the Court of Arbitration can be said to have been, in any large degree, responsible for this parallel movement. The wage statistics from which the above index numbers were calculated included the wages of agricultural and pastoral laborers and domestic servants, practically none of whom was covered by court awards. Some slight effect of the awards may, perhaps, be seen in the fact that wages in manufacturing occupations increased 19 per cent between 1895 and 1905, whereas wages in general increased only 15.5 per cent during these years.[1]

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[1] New Zealand Official Year-Book, 1908, p. 540.

Greater use was made of cost of living as a principle for determining the minimum wage by Mr. Justice Sim, who became President of the Court of Arbitration in 1907, than by any of his predecessors. The reasons for this were, presumably, the following:

1. The majority of the awards made during the first ten or twelve years of the operation of the Act had, as we have observed, allowed some increase in the wages of the workers. After a time, however, it was found that conditions within an industry and the competition which it had to meet made it unwise to make further increases of wages unless it could be established by sufficient evidence that changes in the cost of living threatened to reduce the standard of living of the workers.

2. The influence of the reasoning of Mr. Justice Higgins in the Harvester and other cases, which we have already mentioned. In a conversation with the writer in 1911, Mr. Justice Sim acknowledged that Mr. Justice Higgins had expounded more fully than had anyone else the doctrine of a living wage and said that he was in thoro agreement with the latter's exposition of the subject.

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[1] New Zealand Official Year-Book, 1908, p. 540.

The first important case in which Mr. Justice Sim expressed his opinion concerning the relation which should exist between wages and the cost of living was that of the Gisborne painters heard in May, 1909. The workers had asked for an increase of wages beyond that allowed them by an award of the Court made in 1905. In denying this request, Mr. Justice Sim said:

> The union asked to have the minimum wage for painters increased from 1*s.* 3*d.* to 1*s.* 4½*d.* per hour, on the ground that the cost of living in Gisborne had increased since the last award was made. So far from this being established, the evidence went to show that the cost of a number of the necessaries of life was actually less than in 1905. Taking the case, therefore, as presented by the parties at the hearing, if any alteration were to be made in the minimum wage, it should be a reduction instead of an increase.[1]

Altho this threat of a decrease of wages was not carried out, the Court let the workers know in no uncertain language that they need expect no advances in wages unless they were able to bring proof of their necessity. The judge continued:

> Much expense and disappointment will be avoided if the executives of unions will ponder well what we have said, and if before originating a dispute they will ascertain that there is some definite and reasonable ground for asking for an alteration in the terms of an existing award, and will recognize that without some such ground it is useless to ask for any alteration. It is idle to ask, as many unions do, for an increase in the wages fixed by an existing award, and to have nothing better to offer in support of the application than the evidence of a number of workers who are prepared to say that, in their opinion, the wages asked for are reasonable. To rely on evidence of that kind is to confess that the union has been unable to find anything in the shape of fact or argument to support its case.[2]

This decision was very unfavorably received by unionists throughout New Zealand. It seemed to them to be practically equivalent to saying that under compulsory arbitration there was little hope of laborers improving their position. They were asked to abandon the use of the strike and to accept in place thereof the awards of the Court. If, now, these awards granted increases of wages only when the applicants were able to prove that the increases were necessary to maintain real wages at the existing level, it was obvious that the Arbitration Court was not to be an instrument for bringing about a better distribution of wealth.

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[1] Awards, etc., vol. x, p. 191.

[2] Ibid., p. 192.

It is due to Mr. Justice Sim to say that he recognized fully the force of this criticism. In the conversation which the writer had with him, the judge said that he did not see how the Conciliation and Arbitration Act could be made an effective instrument for bringing about a better distribution of wealth. The Act assumed the continuance of the wage system. The Court, he thought, could not do more than establish a minimum wage, and he believed it was the intention of Parliament to establish by means of this minimum wage a level below which the competition of employers was not to be allowed to reduce wages. Any attempt to bring about a better distribution of wealth must be made outside the sphere of the Court and by such means as profit-sharing, coöperative production, socialism.

In harmony with its policy of requiring unions asking for higher wages to submit evidence tending to show the need of an increase, the Court, in August, 1908, refused to fix a minimum wage for general farm laborers in the Canterbury district, because the applicant union failed to furnish evidence to show that the majority of the workers were dissatisfied with existing wages. The difficulties in the way of fixing a satisfactory minimum for the thousands of workers in an industry like farming were such that the Court held that it was

> not practicable to make an award fixing the hours of work and wages for general farm hands without altering seriously the conditions under which farming is now carried on.[1]

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[1] Awards, etc., vol. ix, p. 526.

It might seem, from this statement, that the Court had put the prosperity of the industry above the welfare of the workers, but this the Court did not admit. Mr. Justice Sim said:

> If a strong case had been made out for interference the Court might have been compelled to make an award on the subject, and to attempt to regulate the hours of work and wages of general farm hands. Such a case, however, has not been made out, and the Court is thus relieved from the necessity of making the perilous attempt to regulate by award the whole farming industry of the Dominion.[1]

According to the evidence given in this case, a large portion (perhaps 90 per cent) of the farm laborers lived with their employers who furnished them with board and lodging. "The question of a living-wage, therefore," said the Court, "does not arise in connection with this class of workers."[2]

The question did arise in connection with the day-workers, and the Court admitted its obligation to consider the claims of these workers. The evidence submitted tended to show that

> a large number of the farmers pay their day-laborers 7*s*. per day and upwards, while others pay only 6*s*. per day, and some as low as 5*s*. per day. We think that anything less than 7*s*. per day is not a living-wage where the worker has to maintain a wife and children, and that, so far as the day-laborer is concerned, a case has been made out for the interference of the Court. In ordinary circumstances the Court would make an award dealing with this case. The day-laborers form, however, only a small fraction of the workers employed by farmers, and we are not justified in bringing seven or eight thousand farmers under the operation of an award for the sake of benefitting a small number of day-laborers who are paid less than 7*s*. per day.[3]

Somewhat naïvely, the Court made a "recommendation" that farmers pay their day-laborers not less than 7*s*. per day and dismissed the case, feeling assured that

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[1] Awards, etc., vol. ix, p. 526.

[2] Ibid., p. 522.

[3] Ibid., pp. 526–27.

"farmers will, no doubt, see the wisdom of giving effect to this recommendation."[1]

In July, 1909, the Court again refused to make an award; this time on the application of the hotel and restaurant employees in private hotels and boarding houses in Christchurch. The Court held that it was impracticable to classify the boarding houses in such a way as to fix varying scales of wages and that to require all to pay the same wages would drive some of them out of business. Mr. Justice Sim, speaking for the majority of the Court, declared that

> Even if they could afford to pay increased wages, there is no reason why they should be compelled to do so. Where, as in the present case, the workers concerned are provided with board and lodging and are paid a wage sufficient to furnish them with all other necessaries of life, there can be no question of a living-wage, and except in special circumstances, the Court ought not to attempt to regulate the wages of such workers.[2]

Mr. McCullough, the representative of the employees in the Court, entered a vigorous protest to this decision declaring that

> the Court in refusing to make an award has made it possible for employers to sweat and underpay a very large and deserving number of young men and women.[3]

A decision which, at first blush, seems to be contradictory to that just considered was reached only a few months later in the case of the Roto-Rua tourist accommodation and boarding houses, where an award was made fixing minimum wages for the various grades of employees and also fixing the hours of work. The Court itself called attention to the fact that an award had been refused in the case of the Christchurch boarding houses, but it noted the following differences between the two cases: the proprietors of the Roto-Rua boarding houses all catered to the tourist trade, had a recognized tariff and carried on their business under similar conditions. Hence, it was possible for the Court to make an award and the evidence presented to the Court showed the need of some regulation, of especially the hours of work. The award was limited in its application to the parties mentioned and was not to apply to most parties keeping private hotels and boarding houses.[1]

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[1] Awards, etc., vol. ix, pp. 527–28.

[2] Ibid., vol. x, pp. 508–09.

[3] Ibid., p. 509.

Other cases might be mentioned in which the Court has refused the demands of the workers for higher wages and has referred to its opinion in the Gisborne case concerning the tendency of the workers to submit their cases without proper evidence.[2]

While the Court of Arbitration in New Zealand has not discussed at length, in connection with its published awards, the principles which have governed its members in fixing the minimum wage, as the Australian courts have done, Mr. Justice Sim, in the above-mentioned interview with the writer, stated informally the principle on which the Court proceeded in establishing a minimum wage and the methods by which this was accomplished. In later interviews Messrs. Scott and McCullough, the representatives of the employers and of the employees in the Court, confirmed the correctness of this statement.

According to the statement made by Mr. Justice Sim, the underlying principle of the minimum wage as it was fixed by the New Zealand Court was that of a living wage to the unskilled worker. In the absence of any reliable statistical statement as to the cost of living in New Zealand, the Court considered that 8*s.* a day was sufficient to guarantee a living wage to workers in unskilled occupations. Just what these eight shillings were supposed to cover was not stated. As in most occupations not more than forty-eight hours a week were worked, this meant for unskilled workers, such as builders' laborers, carters, general laborers in metal working establishments, unskilled workers in quarries, weekly earnings of from forty-five to forty-eight shillings a week. To this minimum wage of 1*s*. an hour, which, in the opinion of the Court constituted a living wage, it was the custom of the Court to allow from 3*d*. to 4½*d*. per hour, in addition, as the minimum wage for skilled workers, the amount of the addition depending, in part, on the number of hours worked per week, and in part on the degree of skill required in the trade. The intention seems to have been to fix a minimum wage of about £3 per week for skilled workers in most trades.

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[1] Awards, etc., vol. xi, pp. 152–53.

[2] See ibid., pp. 324–25 and vol. xiii, p. 88.

These rates were awarded by the Court even when laborers presented no reliable evidence as to their needs. If higher wages were demanded, the burden of proof, as we have already stated, was placed by the Court upon the workers to show why higher rates of pay should be allowed. Such evidence as was presented, said the judge, was usually fragmentary in character, arising out of the individual experiences of the men, and was so incomplete and contradictory that the Court could make little use of it. If the Labour Department, or other governmental agency, he continued, would gather and tabulate statistics which showed what changes in wages and cost of living were taking place, the Court of Arbitration would attach much importance to such evidence. He also spoke, approvingly, of the suggestion which had been made by Sir John Findlay, at that time Attorney-General, that a permanent commission be appointed to study these changes and report on them regularly.

Both the decisions of the Court and the statements made by the members of the Court show plainly that no attempt to determine what was the cost of living in order to use it as a basis for fixing the minimum wage had been made in New Zealand prior to 1912. The Court had apparently not even conducted such inquiries as were being made at this time in Australia by Mr. Justice Higgins prior to the awards made in his court. Instead of endeavoring to ascertain these costs, the New Zealand Court had in large measure stereotyped its award wages by its insistence on 8s. a day as the minimum wage. Not even the employees' representative on the Court seems to have objected to the lack of flexibility which this method of fixing the minimum wage involved. His only contention, at least as he expressed it to the writer, was that the minimum wage should be 10s., rather than 8s., per day.

Altho a rigid minimum wage was fixed by the Court during these years, one should not fail to mention the fact that it was not the expectation of the Court that employers would pay the minimum wage to all the workers of the class to which it applied, nor does the evidence gathered by the Department of Labour concerning the actual wages paid indicate that such was the practice. This is a matter, however, which must be reserved for later treatment.

IV

By the beginning of the year 1912, the members of the Court of Arbitration seem to have become convinced that some concessions to the laborers in the way of slight additions to their wages would have to be made. Whether the Court reached this conclusion on the basis of evidence furnished by the workers or felt that general information concerning the upward tendency of prices was sufficient to warrant these increases of wages, is not ascertainable from the published awards. A Commission on the Cost of Living in New Zealand was appointed this year by sanction of Parliament and made its report on August 30, 1912; but the tendency on the part of the Court to allow increases of wages had already begun before the Commission made its report. A survey of the wages paid to common laborers in the building trades will show this tendency.

Owing to its high rents, Wellington is generally considered to be the most expensive place among the cities of New Zealand for laborers to live. In 1907 the Court had fixed 1*s*. 1½*d*. per hour for a week of not to exceed forty-five hours as the minimum rate to be paid to laborers in Wellington "employed in connection with the erection, alteration or demolition of any building, or in excavating or preparing ground for the same."[1] In March, 1912, an award of the Court increased the minimum rate in Wellington by ½*d*. per hour.[2] In Auckland this same class of labor had been awarded 1*s*. an hour by the Court in 1909,[3] while in 1912 at Poverty Bay in this same district the same class of labor had its minimum wage fixed at 1*s*. 1½*d*. per hour; the Court stating that "the wages fixed by the award are substantially the wages being paid at the present time throughout the Poverty Bay district."[4] In both Wellington and the Poverty Bay district forty-seven hours were fixed as the length of the working week. In 1908 the Court had fixed the minimum wage for builders' laborers in the Wellington district outside the city of Wellington at 1*s*. per hour and for laborers employed in the construction of scaffolds at 1*s*. 1½*d*. per hour.[1] In September, 1912, these wages were increased by 1½*d.* per hour, which maintained the existing differential between the classes. The only statement the Court made in connection with the case was to call attention to the fact that the wages had been increased.[2] It should be said, however, that this new award applied only to certain incorporated towns in the district, Napier, Hastings and Wanganui, and to the country round-about. Elsewhere in the district the former award continued in force.

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[1] Awards, etc., vol. viii, p. 1004.

[2] Ibid., vol. xiii, p. 50.

[3] Ibid., vol. x, p. 469.

[4] Ibid., vol. xiii, pp. 445, 449.

Especial attention has been given to the wages of builders' laborers, because they well represent the class of workers to whom the minimum wage is intended to apply. It is also possible to follow the awards for this class of workers through a series of years without being disturbed by the thought that they may not always represent the same grade of workers.

Other workers had their wages increased by the awards of the Court at about the same time. In connection with an award made to the Wanganui drivers in October, 1912, mention was made of the fact that the Court had been allowing an increase of wages for drivers, generally, throughout the Dominion. "In the city of Wellington the increase is 1*s.* per week. In Auckland, Christchurch, and Dunedin the increase is 4*s.* per week." [3] Butchers' wages at Auckland were increased at about the same time.[4]

On the other hand, plasterers in the Northern district were denied their request for an increase of wages on the usual ground — that the union had "failed to advance any valid reason" why an increase should be made.[5]

The Court went a step farther about this time in its policy of demanding proof from workers who asked to have certain conditions established in an industry. To the letter-press machinists, who were asking to have wages and other conditions fixed for certain classes of their members, the Court declared it would have made provision for them

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[1] Awards, etc., vol. ix, p. 630.

[2] Ibid., vol. xiii, pp. 606, 610.

[3] Ibid., p. 655.

[4] Ibid., p. 672.

[5] Ibid., p. 706.

> if the Association had placed before the Court sufficient information to enable an award to be made. . . . Where the Court is asked for the first time to regulate the wages and conditions in connection with any particular branch of industry, it is necessary for the applicant to put before the Court fully and fairly the conditions in that particular branch.[1]

In November, 1912, the Court, in connection with an award made to employees of the Gisborne Freezing Works, openly announced its policy with reference to the minimum wage for unskilled laborers. The union had asked for a considerable increase of wages over those granted in 1910, when unskilled laborers had been allowed 1*s*. an hour and most of the skilled laborers had been granted 1*s*. 3*d*. per hour. The men now requested a minimum wage of 1*s*. 3*d*. per hour for the unskilled laborers. The basis for this demand was certain agreements recently entered into with the meat companies at Wellington, Wanganui, Masterton, and Patea. These agreements were made during a period of industrial unrest and strikes were threatened unless the demands made by the workers were met. Under these circumstances, the Court came to the conclusion that the agreements which had been entered into were, more or less, forced and did not represent the normal demand for labor. It, therefore, fixed the minimum wage for the unskilled laborers at the Gisborne Works at 1*s*. 1½*d*. per hour, and in doing so, took occasion to speak of the above-mentioned agreements as follows:

> Under these agreements the lowest wage to be paid for unskilled labour of any kind is 1*s*. 3*d*. per hour, and the wages to be paid to

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[1] Awards, etc., vol. xiii, p. 794.

> the other workers are based on this as a minimum. The highest wage fixed by the Court for general unskilled labour is 1*s.* 1½*d.* per hour, and awards with this as a minimum have been made recently in the Wellington and Taranaki districts. In the opinion of the Court, it would not be justified in treating 1*s.* 3*d.* per hour as the proper minimum for unskilled labour, and the award now made is based on 1*s.* ½*d.* per hour as the minimum for that class of labour.
>
> The Court is in the habit of giving great weight to agreements made by the parties to an industrial dispute when it is clear that these agreements have been made voluntarily, and that employers admit that the wages fixed thereby are fair remuneration for the work in question. We are not satisfied, however, that the agreements relied on in this case are of this character. There was no information before the Court from the companies concerned as to the circumstances in which the agreements were made, but it is difficult to believe that the companies would have agreed voluntarily to fix 1*s.* 3*d.* per hour as a minimum for unskilled labour, and there is ground for suspecting that the agreements must have been obtained by pressure which the companies were unable to resist.[1]

The admission by the Court that 1*s.* 1½*d.* was a proper minimum wage for unskilled labor, with 3*d.* additional for skilled labor, shows that the higher cost of living or other conditions were regarded as a justification for a general advance in the minimum rates of pay over those which Mr. Justice Sim and Mr. Scott believed to be adequate a year before.

That the Court did not feel itself bound to take the market price of labor as a basis for a minimum wage is illustrated by the case of the Dunedin plasterers, who, in 1913, asked to have 1*s.* 9*d.* per hour fixed as a minimum wage for their occupation. The Court only allowed 1*s.* 6*d.* per hour and said:

> The fact that plasterers in Dunedin are able at present to obtain a wage of 14*s.* or 15*s.* per day is not, of itself, a valid reason for fixing 1*s.* 9*d.* per hour as a minimum, and no other reason was suggested for the proposed alteration.[2]

Probably one reason for this decision was a feeling on the part of the Court that conditions in the building trades which made an extraordinary demand for plasterers were abnormal, and that the prevailing rate of wages in this occupation might not be maintained in normal times.

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[1] Awards, etc., vol. xiii, pp. 903–04.

[2] Ibid., vol. xiv, p. 50.

The upward tendency of wages continued throughout the year 1913. In September of that year builders' and contractors' laborers were awarded a minimum wage of 1*s.* 2*d.* per hour, which was ½*d.* more than the Court had hitherto allowed for this kind of work. This same allowance appears in the awards made to general laborers in other industries during the year.[1] That the Court was not acting in an extravagant manner or in opposition to public opinion in allowing this advance in wages is indicated by the fact that general laborers in Petone (a suburb of Wellington) had a minimum wage of 1*s.* 3*d.* per hour for a forty-four hour week granted to them at about this time by the borough council as a result of an industrial agreement.[2]

V

If it be conceded as an established fact that within recent years cost of living has been the factor having most influence with the Court in the determination of the minimum wage, it is important to ascertain how closely the wages awarded by the Court have followed the changes in prices of those commodities most generally purchased by laborers.

The first careful and comprehensive study of changes in the cost of living in New Zealand was that completed and published in 1911 by Dr. James W. McIlraith,[3] at that time connected with Canterbury College in Christchurch.

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[1] Awards, etc., vol. xiv, pp. 634, 641, 691–92, 799, 814, 818, 824, 856, 900.

[2] Ibid., p. 1001.

[3] McIlraith, The Course of Prices in New Zealand, Wellington, 1911.

Using the average wholesale prices of forty-five commodities for the decade 1890–99 as a basis, Dr. McIlraith constructed index numbers which showed that prices in New Zealand, which in 1894, the year the Conciliation and Arbitration Act was enacted, were represented by the index number 98, were in 1910 represented by the number 103, a rise of only five points. In Europe the increase was much greater for these years. Sauerbeck's index numbers, arranged on the same basis, showed a rise from 96 in 1894 to 118 in 1910.[1] The increase in New Zealand had been almost entirely due to the change in the prices of farm products whose index numbers had changed from 98 in 1894 to 127 in 1910. Non-farm products, on the other hand, had fallen four points, or from 98 to 94.[2]

The Commission appointed to investigate and report on the cost of living in New Zealand in 1912 took the McIlraith figures as its starting point but supplemented this study with information gained from other sources. The index of wholesale prices of food-stuffs, as reported by the Commission, showed " a rise of 20 per cent between the triennal period 1894–96 and the year 1911," with the rise more marked after 1901 than before.[3] Retail prices in Auckland, including not only food but other commodities and house rents, showed a slightly higher rate of increase, but, generally speaking, this was not true throughout the Dominion. The Commission reached the following conclusion:

> After analysis of the evidence tendered to it, and as far as possible, making allowance for the change in the quality of the articles consumed, especially house-room, and for the fact that the "living" whose cost is measured is living at a uniform standard throughout the period, the Commission finds that the cost of living over the

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[1] McIlraith, The Course of Prices in New Zealand, Wellington, 1911, p. 65.

[2] Ibid., p. 68.

[3] Report of Commission on the Cost of Living in New Zealand, Wellington, 1912, p. xcix.

whole Dominion between the middle and later nineties and the present day must have increased by at least 16 per cent; but the decrease in the size of the average family since the beginning of the period and the higher average income of the period must have tended to diminish the proportion which food is of the total expenditure, and therefore to reduce the real rise to a little below that figure.[1]

Early in 1914, the New Zealand Government Statistician (Mr. Malcolm Fraser) began the systematic collection of retail price statistics of food-stuffs and also the statistics of house rents in the four leading cities of New Zealand (Auckland, Wellington, Christchurch, and Dunedin). Index numbers, weighted according to total consumption and based on the average annual expenditures in the four chief cities, were prepared. The average for the five-year period 1909–13 was taken as the base, which was expressed as 1,000. Prices were collected for every year as far back as 1891, except at Christchurch where no grocery figures were available back of 1899. Separate indices were prepared for each of the three food groups, groceries, meats and dairy produce, and also for house rent, and an index number for all groups combined was also prepared. For the food groups no perceptible and steady rise in the prices is to be noted until the year 1905, since when a general upward tendency is noticeable. The rise in house rents is noticeable throughout the whole period. Taking the index numbers for the combined groups and for all four cities, we find a rise from 875 in 1899 to 1079 in 1914,[2] equivalent to 23.4 per cent. No corresponding index number for wages has been prepared and it is impossible to make an accurate and scientific comparison of the movements of prices and wages in New Zealand during these later years. We have already

[1] Report of Commission on Cost of Living, p. xcix.

[2] Journal of the Department of Labour, June, 1916, p. 492.

observed [1] that wages advanced about as rapidly as did the prices of food prior to 1907.

We are not interested in this place, however, in the movement of wages in general, but in the changes in the minimum wages established by the Court of Arbitration. Altho the Court did not put cost of living in the foreground as a reason for advancing wages during the early years of its existence, it seems probable that the gains which labor secured from the Court in the way of increased wages during these years were fully as great as the increase in the prices of those things which the laborer had to purchase. The minimum wage awarded by the Court is seldom so stated as to enable percentages to be calculated which would show the advances in wages from time to time. At times, the classification of the workers differs; at other times, the age or experience of the worker enters in to help fix the minimum. Many of the awards take the form of a schedule of piece rates. Sometimes the wages will be fixed in one award by the day, in subsequent awards by the hour; while in still other cases the size of the district covered by the award is different from that covered by the previous awards in the same occupation. A comparison of the minimum wage fixed at different times for the same class of workers, given for several occupations or industries, may serve as evidence in support of the writer's belief that for some years the advance in award wages was probably at least as considerable as the increase in the cost of living during these years.

Bootmakers throughout New Zealand received a minimum wage, awarded by the Court, of 40*s*. per week of forty-eight hours, in 1896. In 1905 the minimum was fixed at 45*s*. and the hours of work reduced to forty-five per week. Furniture workers in the Otago (Dunedin) district were awarded 8*s*. per day in 1896 and 10*s*. in 1902. The same class of workers in Wellington were awarded wages varying from 48*s*. to 54*s*. in 1897, while in 1906 they received from 57*s*. 6*d*. to 60*s*. 4½*d*. per week. Painters in Christchurch were awarded 1*s*. per hour in 1897 and 1*s*. 3*d*. in 1905, while in Dunedin they were given 1*s*. 1½*d*. per hour in 1898 and 1*s*. 3*d*. in 1902. Tailors in the Otago and Southland districts received an advance of five shillings a week (from 50*s*. to 55*s*.) between 1897 and 1906. Tailoresses employed in factories in Auckland made a most phenomenal gain: the minimum wage established in 1897 varied from 12*s*. 6*d*. to 17*s*. 6*d*. per week, while in the year 1904 it was fixed at 25*s*. Builders' and general laborers, who represent fairly well the unskilled class, had their minimum wage fixed in Canterbury in 1900 at from 42*s*. to 48*s*. per week, and in 1906 at from 44*s*. to 49*s*. 6*d*. per week. In all the above cases, unless otherwise specified, the number of hours remained the same under the different awards.[1]

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[1] Above, p. 410.

During the early years of Mr. Justice Sim's tenure as President of the Court of Arbitration there was a tendency, already noted, to refuse further advances in wages unless the workers could prove the need of such increases, and this they could seldom do to the satisfaction of the Court. In the absence of any official statistics showing the direction and extent of changes in the cost of living, the Court felt that the evidence presented was likely to be self-contradictory. Indeed, it is doubtful if there was any considerable change in the level of prices in New Zealand during the years 1907 to 1911, inclusive. The McIlraith index numbers[2] of wholesale prices and those of retail prices subsequently prepared by the Government Statistician[1] indicate little change during these years. Beginning with 1912, however, the advance in general retail prices and in house rents was marked, and continued steadily thereafter. The average index numbers for the four leading cities, taken together, were 984 for 1911, 1013 for 1912, 1037 for 1913, and 1079 for 1914.[2]

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[1] All the above figures are taken from the Aves' Report, pp. 94–98.

[2] Op. cit., pp. 62–69.

How far the Court of Arbitration was influenced by the McIlraith figures, published toward the end of 1911, and by the Report of the Commission on Cost of Living, and how far by the evidence presented in Court, does not appear from the comments published in connection with the Court's awards. Some influence was present, for, as we have already shown, beginning early in 1912 the Court allowed considerable increases in the minimum wage to unskilled labor, while it continued generally the 3*d.* to 4½*d.* differential in favor of the skilled laborers. The general practice during 1912 and 1913 was to grant an addition of 1½*d.* per hour to both skilled and unskilled laborers over and above the wages allowed in the awards of 1911. This preserved the existing differential between the classes. Occasionally, the advance to unskilled labor was as much as 2*d.* per hour. Inasmuch as the general rule in 1911 and even earlier had been to allow 1*s.* an hour to the unskilled laborers, the advances made in 1912 and 1913 amounted to from 12½ to 16⅔ per cent, which was doubtless sufficient to cover the average increase in the cost of living for the laborer's family.

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[1] New Zealand Official Year-Book, 1915, pp. 765–91.

[2] Ibid., pp. 780–81.

VI

Mr. Justice Sim retired as President of the Court of Arbitration at the end of 1913, after seven years' service in that capacity. This was a longer period of service than that of any of his predecessors. His place was taken by Mr. Justice Stringer, the present President of the Court. No immediate change in the policy of the Court as regards the minimum wage was noticeable. Indeed, the new president early announced it as his intention to follow the rule laid down by his predecessor in regard to wages. In connection with an award made to plumbers and gas-fitters throughout the Dominion in March, 1914, a minimum wage of 1*s*. 6*d*. per hour was fixed for registered plumbers and 1*s*. 5*d*. for those unregistered. The Court felt it necessary to explain the increase of wages which had been allowed, as follows:

> We have thought it proper to offer some inducements to workers to qualify themselves for the higher branches of the industry, and we have, therefore, differentiated between the registered and the unregistered plumber, awarding the wages of 1*s*. 6*d*. per hour to the former and 1*s*. 5*d*. per hour to the latter. The wage of 1*s*. 5*d*. is conceded on the basis of the voluntary agreement on the part of the master plumbers of Auckland to pay that rate. If the agreement had not been made, we should probably have fixed the wage of the unregistered plumber at 1*s*. 4½*d*., that being the rate arrived at by the Court, after consideration of many cases extending over some years, as the reasonable minimum wage for skilled workers, which was to remain until it was satisfactorily established that the conditions of the trade had so altered as to render some modification desirable and proper.[1]

This statement by the Court was practically equivalent to an announcement to employers that they need not concede to their skilled workers, either by means of an industrial agreement or through the medium of the

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[1] Awards, etc., vol. xv, p. 156.

Conciliation Councils more than 1*s.* 4½*d.* an hour as a minimum wage, because the Court would support them in such a stand. Furthermore, the awards of the Court since that time show a determination to adhere to the 1*s.* 4½*d.* rate. The minimum wage for men employed as pressers or in other capacities in the tailoring trade at Auckland, at weekly rates, was fixed at £3 per week, "to bring them into something like conformity with the other skilled trades."[1] The last award made in this industry in this same occupation had established £2, 10*s.* per week as the minimum wage for this class of work.[2] A new timber workers' award made in the northern district in May, 1914, readjusted wages of all classes of workers, generally allowing 9*s.* per day to those workers who had received 7*s.* 6*d.*, 8*s.* or 8*s.* 6*d.* per day by the award of April, 1911, and allowing correspondingly higher wages to the men who had been awarded 9*s.* or more per day by the award of 1911.[3] These changes also were said to have been made for the purpose of bringing the wages "in conformity with the minimum rate of wages ruling in other industries for the lower paid workers."[4]

Among recent awards[5] where the 1*s.* 4½*d.* rate per hour has been fixed as a minimum for skilled workers may be mentioned those made to the boiler makers, engineers, boat builders, picture framers, and wire mattress makers, flour mill employees and the canister workers. All these awards were made in 1915. In the case of certain seasonal trades, such as the building trades, or where certain exceptional conditions prevailed the minimum rate for skilled workers has been made as high as 1*s.* 6*d.*, 1*s.* 8*d.*, or even 1*s.* 8½*d.* per hour.

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[1] Awards, etc., vol. xv, pp. 298, 302.

[2] Ibid., vol. xii, p. 681.

[3] Ibid., vol. xv, pp. 508–09; vol. xii, pp. 199–200.

[4] Ibid., vol. xv, p. 510.

[5] Ibid., vol. xvi, pp. 228, 259, 307, 312, 322, 166, 289, 338, 419, 531, 670, 717.

For the unskilled workers, the uniformity in the minimum wage in Mr. Justice Stringer's Court is less complete. The general tendency throughout 1914 and 1915 seems to have been to maintain the 1*s.* 1½*d.* hourly rate in most trades using this grade of labor.[1] Occasionally the rate has been made 1*s.* 2*d.*[2] or, in Wellington, 1*s.* 3*d.*[3]

In some of the recent awards the Court, while refusing to raise the minimum wage for skilled laborers, because of industrial conditions due to the war, has felt itself under the necessity of granting some increase to the lowest-paid laborers. Thus, in the case of the Canterbury metal workers' assistants, heard in June, 1915, the Court made some increase in wages and said:

> Although the Court was unable to increase the higher wages being paid to the skilled workers in the engineering trade, it has felt that the lower-paid assistants in that trade were entitled to some increase, having regard to the fact that their minimum wages have remained stationary for some years, while, on the other hand, cost of living during the same period has materially increased.[4]

The minimum rates for the laborers were made ½*d.* per hour less than the rates fixed a few months before at Wellington, presumably because of the differences in house rents in the two places.

In the case of the Wellington flax mills' employees, heard in August, 1915, the Court decided that industrial conditions due to the war made it inexpedient to raise the wages of the skilled workers. In the case of the unskilled, however, the Court said:

> The minimum wage fixed by the existing award for the lowest-paid workers was, however, quite inadequate to provide them with a

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[1] Awards, etc., vol. xvi, pp. 335, 579, 717.

[2] Ibid., pp. 406, 444.

[3] Ibid., pp. 91, 444. In the Wellington case the Court, in speaking of the increase of the minimum wage by 1*d.* more than it usually awarded gave this warning to workers: "This must not, however, be regarded as establishing a standard wage for similar workers in other parts of the Dominion, as the increase is granted owing to the exceptionally high rents which workers in this district have to pay for suitable dwelling-houses."

[4] Ibid., p. 337.

> reasonable living-wage, and this the Court has substantially increased, altho it has not brought it up to the rate generally fixed for unskilled labour in other industries.[1]

The lower-paid shop assistants in the Wellington retail soft-goods trade received an increase in the minimum wages in September, 1915, altho for the trade in general the Court thought it an inopportune time to make any substantial change in wages paid, since the trade

> will inevitably be prejudicially affected by the lessened spending-power of the people, consequent upon the increased taxation which will have to be imposed to meet the heavy charges upon the Dominion in connection with the war.[2]

A similar policy was followed in the case of the Wellington Stationary and Traction Engine Drivers.[3]

While these recent awards show that the interests of the lower-paid workers have not been neglected by the Court, the increases of wages allowed have been inconsiderable and have probably not been more than the workers, if organized, could have secured without the aid of the Court. Indeed, in some instances they have been less, as is shown by the results of several industrial agreements recently made. The Court, in its awards, has adhered pretty closely to the 1*s.* 1½*d.* rate for an hour's work in the case of unskilled labor. Occasionally it has allowed 1*s.* 2*d.*, and in the city of Wellington, 1*s.* 3*d.* On the other hand, the Auckland Builders' Contractors' and Industrial Workers' Union has recently secured by means of an industrial agreement a minimum wage of 1*s.* 3½*d.* per hour,[4] and the general laborers employed by the Gisborne Borough have received, by agreement, 1*s.* 3*d.* per hour.[5]

It will be noted that after Mr. Justice Stringer became President of the Court no advances were made in the standard minimum wage for either skilled or unskilled workers, at least during the years 1914 and 1916.[1] Advances were made, as already noted, in certain trades and occupations but these were, as the Court said for the purpose of bringing these wages " into conformity " with wages in other trades.

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[1] Awards, etc., vol. xvi, p. 431.

[2] Ibid., p. 487.

[3] Ibid., p. 700.

[4] Ibid., p. 796.

[5] Ibid., p. 649.

This failure to advance the standard minimum rates is all the more remarkable in view of the notable increase in the cost of living which took place during the years 1914 and 1915, as shown by the reports of the Government statistician. The movements of retail prices of groceries, dairy produce, and meat[2] as shown by the statistical reports from twenty-five representative towns, and weighted according to the population of these towns, is shown by the following index numbers of all groups, taken collectively. It will be remembered that the base 1000 is the average for the five-year period, 1909–13.

1914		1915		1916	
March,	1063.	March,	1186.	March,	1242.
June,	1077.	June,	1194.	June,	1268.
Sept.,	1098.	Sept.,	1203.	Sept.,	1282.
Dec.,	1146.	Dec.,	1238.[3]		

The weighted index number for house rents, collected by the new method adopted by the statistician, showed a decline during these years, being 986 in March, 1914, 965 in March, 1915, 964 in March, 1916, and 912 in September of the same year.[4] It will be noted that the decline in rents did not compensate for the advance in the prices of food-stuffs. The Government statistician says that " about 50 per cent of the expenditure [of the typical household] is upon food and rent."[1] As indicated in the Table, the percentage of increase in the price of food between July, 1914 and October, 1916 has been 20.47 for the whole Dominion,[2] which, according to Mr. Fraser, represents a rise of 24.31 per cent in the typical household budget of the working class.[3]

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[1] The awards made during the year 1916 have not yet reached me.

[2] A change in the mode of collecting the statistics of house rents makes it undesirable to include them with the other figures.

[3] Journal of the Department of Labour, November, 1916, p. 596.

[4] Ibid.

Mr. Justice Sim had said that the Court of Arbitration would attach much importance to statistics collected by the Government showing the trend in the cost of living, but it does not appear that the Court, under the presidency of his successor, made much use of such evidence during the years 1914–15. Possibly the Court feared to make a change in the rates of wages while the war was in progress, because the advance could not be sustained when the war closed. Viewing the matter from this distance, and frankly admitting our ignorance of the conditions disclosed at the hearings of the cases which have arisen, it does not appear what justification, if any, there has been for the failure on the part of the Court to advance the minimum wage, both for skilled and for unskilled labor, since the outbreak of the war. While the war has undoubtedly disturbed the normal operations of business, New Zealand is said to be enjoying unusual prosperity, due largely to the unusual demands for her products in the countries engaged in war. Greater steadiness of employment has doubtless come to the rescue of the worker and may have prevented a lowering in his standard of living even with a steady advance in retail prices. But if this is the explanation of the Court's failure to advance the minimum wage, it means that, according to that tribunal, the employing classes alone are to keep all the gains that come from a rise of prices.

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[1] Journal of the Department of Labour, May, 1916, p. 269.

[2] Ibid., November, 1916, p. 600.

[3] Ibid., p. 598.

VII

Our review in the preceding pages of the regulation of wages by the Court of Arbitration of New Zealand leads to the following conclusions:

1. The Court, having little or no guidance from Parliament, has limited its work in regulating wages to prescribing a minimum wage for a given class of workers, usually distinguishing between the skilled and the unskilled in each industry or occupation, but making no effort to determine the exact wages to be paid to those workers who are worth more than the minimum.
2. During the early years of its existence the Court made no statement of the principles according to which the minimum wage was determined but, while allowing many increases of wages, it seemed inclined, prior to 1907, to give chief consideration to the ability of the industry to support increases of wages under the existing competitive conditions.
3. While giving such consideration to the profits earned by an employer as tend to show his ability to stand increases of wages, the Court has steadfastly refused to fix wages on a profit-sharing basis.
4. Altho cost of living was not taken as a principle for determining wages prior to 1907, wages seem to have kept pace with advances in the prices of food prior to that date.
5. Cost of living was definitely adopted as the principle for determining the minimum wage in 1907 and thereafter. The Court adopted a standard minimum wage of one shilling per hour for unskilled labor and fixed the minimum wage for skilled workers at from 3*d.* to 4½*d.* above this amount. The burden of proof to

show that a higher minimum was needed was placed by the Court upon the laborers.

6. Cost of living increased very little in New Zealand between 1907 and 1911 and during these years few changes were made in the minimum rates fixed by the Court at the beginning of this period.

7. A rapid increase in the prices of food and in house rents took place during the years 1912 and 1913, and the Court advanced the minimum wages of both skilled and unskilled workers to keep pace with the increase in the cost of living.

8. The advance of prices continued during the years 1914 and 1915 and this upward movement was greatly accelerated by the war. The Court of Arbitration, apparently because of war conditions, allowed few increases of wages, and they applied almost exclusively to the unskilled workers during these years.

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THE LITERACY TEST AND ITS MAKING

SUMMARY

Noteworthy provisions, other than the literacy test, in the act of 1917, 448. — The literacy test itself significant of a change in public opinion, 449. — The earlier acts aimed at selection only, 451. — The literacy test a measure of restriction, 452. — The bill of 1897, vetoed by President Cleveland, 453. — Speaker Cannon's successful manoeuvers against a similar bill in 1906, 455. — President Taft's veto of 1913, 456. — President Wilson's veto of 1915, 459. — The act of 1917 finally passed over the veto, 459.

"The opinion which changes the law is in one sense the opinion of the time when the law is actually altered; in another sense it has often been in England the opinion prevalent some twenty or thirty years before that time; it has been as often as not in reality the opinion not of today but of yesterday." Thus does Mr. Dicey sum up one of the features of law-making in that country; and he intimates that in the United States, the very home of democracy, the situation is not different.[1] Of the truth of this proposition there could scarcely be a better illustration than is furnished by the history of immigration legislation in this country, and in particular the history of the literacy test.

The amount of public attention claimed by the literacy test in the last few years, and the uniformity with which its enactment is recognized as marking an epoch in immigration legislation, are remarkable. So completely has this feature of recent immigration bills engrossed the public mind as to obscure the fact that each of these bills has been a general codifying act, embodying all that was best in previous legislation, and introducing a number of changes, some of them of wide scope and great importance. Thus the measure which became law on February 5, 1917, contains, in addition to many changes in the administrative features, noteworthy new provisions. The head tax is raised from $4.00 to $8.00, and children under sixteen, accompanying father or mother are exempted. The excluded classes are enlarged by the addition of persons of constitutional psychopathic inferiority (a phrase which has occasioned much hilarity on the part of the opponents of the bill), persons with chronic alcoholism, vagrants and stowaways; and the provisions regarding exclusion of polygamists, anarchists, and mental defectives are strengthened. The prohibitions regarding the stimulation of emigration are made more strict and explicit. Orientals (with the exception of Japanese, already excluded by the "Gentleman's Agreement") are excluded by a geographical delimitation. The fine imposed upon transportation agencies for bringing inadmissible aliens is raised from $100 to $200, and an additional sum, equal to the amount paid by the alien for his transportation from the initial point of departure, is exacted from the transportation company, to be returned to the alien. Provision is made for the placing of inspectors and matrons on immigrant carrying vessels. Arriving aliens are required to make a statement under oath regarding their purposes and intentions in coming. The ordinary period of deportation is raised from three years to five years, and the deportable classes are enlarged, particularly by the inclusion of aliens convicted of crimes and sentenced to imprisonment of one year or more. It is made impossible for a sexually immoral female alien to avoid deportation by marriage to an American citizen. Provision is made for the deportation of aliens to the country from which they came, as well as to the port of embarkation. An elaborate set of provisions is established to prevent inadmissible aliens from entering illegally by means of enrolment in a ship's crew. Numerous other changes are made in the direction of increasing the responsibility of transportation companies and enlarging the fines and penalties.

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[1] A. V. Dicey, Law and Public Opinion in England, pp. 7, 32.

The foregoing modifications by themselves would make the act one of the highest importance. To understand why, in the popular mind, the literacy test has so completely overshadowed all these other features it is necessary to have in mind an outline of the general history of immigration legislation in this country.

The initial attitude of the people of the youthful United States respecting the question of immigration was one of easy tolerance bordering on indifference on one side, and frank welcome on the other. In some regions immigrants were eagerly desired, and positive efforts were made to attract them; nowhere was there any well-defined antipathy toward the immigrant as such, nor any apprehension as to the effects of his presence in the country. This state of mind is easily comprehensible. On the one hand, the country was large and new, natural resources seemed unlimited, and the western bounds of settlement appeared indefinitely remote. On the other hand, the volume of immigration was slight, and those who came were for the most part closely allied in race and customs to those already here.

This attitude persisted well into the nineteenth century. In fact, with the beginnings of a national industry, and the development of internal transportation systems, the demand for foreign labor began to be more keenly felt, and immigration increased in response. It is not until about 1830 that there can be detected any well-marked current of thought opposed to the immigrant. From that date, however, objections to unregulated immigration became increasingly frequent and emphatic. These objections were all based on one common ground — the poor quality of the immigrants. With the exception of an occasional clear thinker, there was scarcely a notion of the possible dangers from the mere numbers of immigrants, regardless of their quality. The main defects observed in the existing stream of immigrants were four in number, criminality, disease, pauperism, and Roman Catholicism. While it is probable that the last of these considerations outweighed all the others among the motives which led to the formation of the Native American and Know-Nothing parties, yet for obvious reasons it could not receive full and frank expression, and in the anti-immigration agitation of the thirties, forties, and fifties particular stress was laid upon criminality and pauperism. One of the chief objects sought in this agitation was the assumption by the Federal government of the control and regulation of immigration. Petitions and memorials to this effect poured in upon Congress in shoals. But Congress could not be induced to take any steps in the direction of limiting immigration. The only Federal laws passed during this period had to do with the regulation of shipping conditions and the safeguarding of the lives and health of the immigrants, and were therefore in the nature of encouragement, rather than of limitation. Various states made attempts to exclude the manifestly undesirable, but these were rendered largely ineffectual by the rivalry among the states for good immigrants, and the repeated decisions declaring all such measures unconstitutional.

The Civil War and the concurrent cessation in immigration put a check to anti-immigration agitation for a number of years, and it was not until 1882 that Congress at last took the step of placing immigration affairs definitely in the hands of the Federal government.[1] And the significant thing is that the measures adopted at this time were exactly those which had been demanded thirty to fifty years earlier. Convicts, lunatics, idiots, and persons unable to take care of themselves without becoming public charges were to be excluded. Thus when the Federal government finally consented to take charge of immigration, the legislation embodying this step was based definitely on the principle of selection, that is, the qualitative sifting of immigrants, which was just the animating principle of the agitation of the thirties, forties, and fifties. But by this time, a new immigration danger was beginning to be recognized, and a new principle of regulation was being brought to the fore. The danger was that of too large numbers of immigrants; the principle, that of restriction — numerical limitation.

Congress, however, having adopted the principle of selection as the basis of legislation, stuck to it, and for the next thirty-five years the successive immigration laws had the general effect of increasing, perfecting, and amplifying the selective tests for admission. Nowhere in the complex body of legislation which has grown out of the act of 1882 can there be found, up to the year 1917, a single provision which is ostensibly restrictive on its face, nor one which, even in practice, has the effect of materially reducing the volume of immigration. The whole aim of the laws is to keep out the undesirables.

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[1] The Chinese Exclusion acts, as well as the act of 1875 excluding prostitutes and criminals, are separate affairs.

It now becomes clear why the literacy test has aroused such tremendous feeling, and attracted such widespread attention. While ostensibly a selective measure, putting the finishing touch to our classification of undesirables, it will affect so large a proportion of the ordinary immigration stream as to be really restrictive. In effect, therefore, it introduces a new principle. This feature has furnished the most vulnerable point of attack to the opponents of the bill, while it has been a more or less concealed argument in its favor on the part of its supporters. There can be no doubt that the agitation for the literacy test represents, in a very real way, the growing sentiment in favor of the actual restriction of immigration.

Where, when, and by whom the literacy test was first advocated as a legislative measure for controlling immigration is a matter of only historical interest. It began to attain prominence about the year 1890. The Joint Congressional Committee on Immigration, which held its hearings during that year, evidently had the literacy test in mind as a possible practical expedient, and its report contains testimony in favor of the test from numerous witnesses, many of them persons of foreign birth. The test was also advocated by Senator H. C. Lodge in an article in the *North American Review* for January, 1891, which was later introduced into a speech on the floor of the House. During the next three or four years the measure was included in several bills introduced in Congress, none of which attained any prominence.

In 1894 there was formed in Boston the Immigration Restriction League, which soon focussed its activities on the literacy test, and from that time to the present has been probably the most influential agency working distinctly toward this end. It was instrumental in the formulation of the bill which was introduced in the Senate in December, 1895, by Senator Lodge, and in the House by Mr. McCall, and can claim the credit for many improvements in the immigration laws, in addition to the literacy test.

In the early part of the year 1896 there were introduced in both Houses of Congress bills to establish a literacy test. The measure passed in the House on May 20, 1896, by a vote of 195 to 26; on December 17 of the same year it passed the Senate by a vote of 52 to 10. After much discussion, and some changes in the wording of the test, the bill which finally came from conference provided for the exclusion of all persons over sixteen years of age, physically capable of doing so, who could not read and write the English language or some other language. Exception was made in favor of persons over fifty, who were parents or grandparents of a qualified immigrant, himself over twenty-one and capable of supporting such parent or grandparent; also the wife or minor child who accompanied or was sent for by husband or parent. It is noteworthy that in this bill the test included both reading and writing.

By this time, however, the bill had become something more than a measure establishing a literacy test. On the motion of Mr. Corliss of Michigan there had been added in the House an amendment, which, couched in general terms, purported to put a check to transitory immigration, or "birds of passage," but which was directly aimed at certain classes of Canadian laborers who habitually came across the border to do daily labor in the United States.

Having passed both Houses in its final form, the bill went to President Cleveland, and on March 2, 1897, was returned by him, with a long and carefully worded veto message, in which the President characterized the measure as a "radical departure from our national policy relating to immigration," which policy he believed to be justified by the prosperity of the country; he made numerous criticisms of the wording as well as the content of the bill, and objected in particular to the Corliss amendment. It has been stated on good authority that this last provision was what really determined the veto.

The House promptly passed the bill over the veto by a vote of 193 to 37 on March 3, but no time was left for action by the Senate. Probably it would not have passed that body in any case, as a change of sentiment among its members, attributed to the vigorous and active work of the steamship companies and other opponents, had reduced the Senate vote in its favor to a bare majority.

During the next few years the measure was kept before Congress, largely through the activity of the Immigration Restriction League, and received favorable votes in both Houses, but not at the same time. In the mean time, the Industrial Commission had rendered its report, which included many suggestions for the improvement of the immigration law. The literacy test was not among them, tho the Chairman and one other member put themselves on record as favoring this measure. A general immigration bill was framed to accord with these recommendations, to which the literacy test (now worded to require ability to read only) was eventually added. In spite of the fact that there was a majority of the Senate in favor of this test, such powerful opposition developed that it was finally dropped in order to save the entire bill. This bill became the act of March 3, 1903.[1]

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[1] In preparing the foregoing narrative the writer has drawn freely on Mr. Prescott F. Hall's valuable book on immigration, in which many further details of great interest may be found.

The bulk of opinion in both Houses, however, remained strongly in favor of a reading test, and when the next immigration bill was framed in the Senate, provision was made on amendment for the application of such a test. The bill passed the Senate without a dissenting vote and went to the House. There another bill, known as the Gardner bill, was substituted, which did not differ materially and also contained, as Section 38, a literacy test. It was perfectly clear that there was ample sentiment in its favor to pass this test, and the entire bill. The Speaker of the House, Mr. Cannon, was, however, violently opposed to the literacy test, and used all his great influence for its defeat. Not only did he secure the enactment of a rule preventing a yea-and-nay vote upon this particular feature, but (according to the charges of the American Federation of Labor) actually left the chair, went upon the floor of the House and induced members to go into the cloak rooms or to vote against the measure. The test was finally defeated by what is probably one of the most remarkable amendments ever offered in Congress. On June 25, 1906, Mr. Grosvenor of Ohio rose on the floor of the House and moved to strike out Section 38, and insert the following: "Section 38. That a commission is hereby created . . . (which) shall make full inquiry, examination, and investigation into the subject of immigration." The amendment passed and the bill passed. In conference the Senate was induced to drop the literacy test in return for the elimination of the "Littauer amendment," a "liberal" provision added in the House, and the bill became the act of February 20, 1907.

Immediately thereafter, President Roosevelt appointed the Immigration Commission. This Commission spent nearly four years and $900,000 in the study of immigration, embodied its findings in a report which could not be crowded onto President Eliot's five-foot shelf, unanimously recommended the restriction of immigration, and, with a single dissenting voice, agreed that the best form of restriction was a literacy test. Senator Dillingham of Vermont and Representative Burnett of Alabama, chairmen of the respective Committees on Immigration and both members of the Immigration Commission, were now the leaders in immigration affairs in Congress, and have been in charge of all subsequent immigration bills of importance.

Supported by the findings and recommendations of the Immigration Commission, bills strengthening the provisions of the immigration law, improving its administration and including the literacy test, were again introduced into Congress. In January, 1913, after a long debate and many modifications, a bill, satisfactory to both Houses and containing a literacy test, was passed by both Houses and went to President Taft for his signature. The President expressed himself as in doubt regarding the merits of the educational test and in order to assure himself in the matter held a public hearing in the White House. Finally, at the last moment, the President returned the bill to the Senate on February 14 without his signature. The veto message was brief. After the customary expressions of regret and acknowledgment of the many valuable features in the bill the President said, "But I cannot make up my mind to sign a bill which in its chief provision violates a principle that ought, in my opinion, to be upheld in dealing with immigration. I refer to the literacy test. For the reasons stated in Secretary Nagel's letter to me I cannot approve that test. The Secretary's letter accompanies this." The letter referred to is lengthy, contains an elaborate and somewhat specious arraignment of the literacy test, and recommends distribution as a preferable means of correcting the evils of immigration. One of its most significant passages is the following: " So far as the industrial conditions are concerned, I think the question has been superficially considered," — after nearly twenty years of debate in Congress and the reports of the Industrial Commission and the Immigration Commission. Another passage bears the clear implication that if the literacy test could have been supported as a selective measure the Secretary might have approved it, but that it could not, and as a restrictive measure it introduced a principle which he could not accept. It is a fair inference that this letter was the determining factor in the President's decision to veto. Subsequently, Mr. Taft stated in a public address that he vetoed the measure because he did not believe it was a good selective test.

An attempt was promptly made to pass the bill over the veto. This was successful in the Senate, the vote being 72 to 18, but failed in the House by a margin of five votes (213 to 114).

Congress, however, had its mind thoroly made up. Before President Wilson had been in the chair two years there was presented to him an immigration bill essentially similar to the preceding one, the final votes having been 50 to 7 in the Senate, and 227 to 94 in the House. It was well understood in advance that the President was opposed to the literacy test, but his willingness to hear both sides was evinced by the fact that he followed the precedent set by his predecessor and held a public hearing in the White House. In the end, however, he also followed precedent by returning the bill without his signature (January 28, 1915). His veto message was a painstaking document, in which he referred to the literacy test as a means " to limit the number of immigrants by arbitrary tests" which would "reverse the policy of all the generations of Americans that have gone before." He expressed himself as willing to follow the wishes of the people, but as quite unconvinced that the bill in question represented their wishes in this particular. He queried whether any political party had ever declared in favor of such a measure and been entrusted with the reins of government — an unfortunate allusion in view of the fact that McKinley was elected in 1896 on a platform which specifically favored an educational test. He laid much emphasis upon another section of the bill which seemed to close the door to political refugees from abroad; but even more strongly he objected to the literacy test, which proposed to turn away from tests of character to tests of opportunity, and the purpose of which was "restriction, not selection." He asked that the question be embodied in party platforms and voted upon, as it was "too fundamental to be settled otherwise" — a phrase hardly calculated to soothe the feelings of a somewhat irritated Congress.

The vote in the House on the repassage of the bill over the veto was 261 to 136, another failure by a bare margin. There is little doubt that it would have passed the Senate had opportunity been given.

Again two years were consumed in carrying the bill through Congress and presenting it to the President. Soon after the middle of January, 1917, an immigration bill with a literacy test was once more in President Wilson's hands. The provisions of the test were similar to those in other recent bills, refusing admission to "all aliens over sixteen years of age, physically capable of reading, who can not read the English language, or some other language or dialect, including Hebrew or Yiddish." Exceptions were made in favor of the father or grandfather over fifty-five years of age, the wife, mother, grandmother, or unmarried or widowed daughter of an admissible alien or citizen; also in favor of aliens fleeing from religious persecution, aliens who have resided continuously for five years in the United States and return within six months and aliens in transit. The test was to consist of reading not less than thirty or more than forty words in ordinary use, printed on a slip of paper, in any language or dialect chosen by the alien.

It was expected that President Wilson would veto this bill, and he did (January 29, 1917). This message was briefer, and much more indifferent in tone than the former one. Nothing was said this time about the wishes of the people. The unwillingness to depart from tradition or to impose tests of opportunity was reiterated. But special emphasis was laid upon the "religious persecution" clause, on the ground that its application would be likely to cause international difficulties by putting the United States in the position of criticizing foreign governments. It is interesting to compare this objection with one of the President's two chief criticisms of the earlier bill, namely, that the provisions for the exclusion and deportation of anarchists and their kind would close the door to aliens planning in this country for the overthrow of foreign governments.

The action of Congress was prompt and decisive. On February 1, the House passed the bill over the veto by a vote of 287 to 106 and on February 5, the Senate finally settled the matter by a vote of 62 to 19, making the thirty-second time that the test has passed one House or the other, the average of 14 record votes in the House being 216 to 79, and of 10 record votes in the Senate, 53 to 15.

Thus the demand for the restriction of immigration, which has been an increasing factor in our national thought for over twenty-five years, has at last found expression in a measure which ostensibly completes the selective system of admission, and for which, by all tests, the people were ready two decades ago. How long it will take to secure the passage of a frankly restrictive law, such as that urged by Senator Dillingham, or that in Mr. Gardner's new proposal, time alone can tell.

It is an interesting ground for speculation whether these repeated presidential vetoes of a measure which has received such abundant support in Congress reflect any general difference in attitude toward a question of this sort on the part of the Executive and the Legislative. Obviously the cases are too few to serve as a basis for generalization. Very probably individual factors would offer a sufficient explanation in each case. Yet it is significant that President Cleveland remarked subsequently that if he had known as much about immigration at the time as he did later, he would have signed the bill in spite of its objectionable features. Possibly a partial explanation may be that the regulation of immigration is a technical matter, and the President, having little time to inform himself, is more impressed by tradition and the superficial " liberality " of free admission than is Congress, which has ample opportunity to become conversant with the facts.

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COÖPERATION AMONG THE MORMONS[1]

SUMMARY

Introduction: importance of coöperation in the early economic history of Utah, 461. — I. Associative enterprises in colonization, 463. — Mormon colonization policy, 463. — Coöperative building of irrigation systems, 466. — Division of the irrigation water acquired, 468. — Other kinds of concerted community effort, 472. — II. Coöperative stores; causes leading up to their establishment, 473. — Zion's Coöperative Mercantile Institution, 475. — The smaller retail stores, 489. — III. Industrial coöperation. Woolen mills, 490. — The beet sugar industry, 490. — Consolidated Wagon and Machine Company, 493. — Beneficial Life Insurance Company, 494. — Hotel Utah, 495. — IV. Present status, 498.

WHEN the Mormons entered Utah in 1847, they found themselves in what they regarded as virtually a desert. Sage brush, interspersed with bunch-grass, covered the hills and valleys, leaving only a green fringe of willows, wild rose bushes, and cottonwood trees along the few small creeks. Scattered tribes of Piutes — destitute nomads — were the only inhabitants. True, the mountain scenery impressed its rugged grandeur on the pioneers, but that did not relieve the desolation of the land itself. It cannot better be described than in the words of Captain Howard Stansbury, of the United States Army, who surveyed the Great Salt Lake Valley in 1849.

> One of the most unpleasant characteristics of the whole country . . . is the entire absence of trees from the landscape. The weary traveller plods along, day after day, and week after week, his eye resting upon naught but interminable plains, bald and naked hills, or bold

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[1] The writer wishes to express his sincere appreciation for the kindness of Mr. John Graham Brooks, who has made numerous helpful suggestions concerning this article.

> and rugged mountains: the shady grove, the babbling brook, the dense and solemn forest, are things unknown here; and should he by chance light upon some solitary cottonwood, or pitch his tent among some stunted willows, the opportunity is hailed with joy, as that of unusual good fortune.[1]

To reclaim this cheerless region, the pioneers diverted the water of the mountain streams to the parched ground, thereby being the first among Anglo-Saxon people to practice irrigation, which has later proved to be the very economic salvation of the arid West.[2] Gradually, but not without tremendous difficulties and hardships, the work of reclamation was extended and an increasing area of arable land acquired. Where formerly existed only a barren waste, now flourished thriving cities and towns; in place of the sage brush grew waving crops and verdant orchards. Nothing could be more eloquent of the industry and perseverance of the pioneers of Utah than the manner in which travelers, from 1850 to the present time, in describing their impressions of the state, have used the Biblical phrase, " made the desert blossom as the rose."

What were the economic forces which brought about this transformation — the methods used, the underlying social causes ? Too little consideration has been accorded these questions. True, the Mormon religion has received ample attention. But in all the voluminous mass of labored explanation, partisan propaganda, sincere criticism, zealous defense, confessed antagonism, and dishonest villification which constitute the literature of that subject, the meagerness of scholarly effort to understand the economic life of the founders of Utah is astonishing. " Is it not worth while," asks Professor

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[1] Captain Howard Stansbury, U. S. A., Explorations and Survey of the Valley of the Great Salt Lake. Printed by order of the United States Senate, 1852, p. 129.

[2] Charles Hillman Brough, Irrigation in Utah. Johns Hopkins University Studies in Historical and Political Science, Baltimore, 1898, pp. 1–8.

Ely, in one of the initial ventures into this field, "to pass over the religious controversies connected with Mormonism and their outcome and examine into the achievements and manner of life of the Mormons, so far as these things relate to economic and social matters?"[1] Within the limits thus laid out, one phase of such activities of the people of Utah stands out as more important and significant than the others — namely, their practice of coöperation. Not only did coöperation enter vitally into the economic life of the first settlers, but it has had a most far-reaching effect on their subsequent commercial and industrial affairs. With the nature of the Mormon system of coöperation, its characteristics, effects, and present status, this article purposes to deal.

The coöperation practised among the Mormons is found to be of three kinds, each distinct from the other, but each a logical development of the preceding type. They are: first, a period of informal but nevertheless highly effective and efficient coöperation, extending from 1847 to 1868; second, the foundation and growth of coöperative stores from 1868 to approximately 1890; and third, the development of a system of coöperative industrial enterprises, beginning in 1890 and continuing until the present time.

I

If the term coöperative colonization appears at first glance to be a misnomer, it nevertheless accurately expresses the means by which the early settlement of Utah was effected. A brief survey of the Mormon policy in colonizing the territory is necessary in order fully to realize the truth of this. The first great fundamental fact from which all study of the period must proceed is that the Mormons were in Utah to build a home. The settlers of neighboring states were drawn west by prospects of mineral wealth or to engage in trapping or stock raising; but the Mormons made their memorable trek across the plains in search of a permanent abode where they could remain without further molestation.[1] Hence their scheme of colonization was one of home building. The towns and villages in Utah, therefore, were not established inadvertently or by individual initiative. On the contrary, they were a result of very definite plans.

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[1] "Economic Aspects of Mormonism," Harper's Magazine, April, 1903, vol. cvi, p. 667.

When the first settlement had been made on the shore of the Great Salt Lake, parties were immediately dispatched into the neighboring valleys to discover other sites available for colonies. If a place was approved, a group was detached from the old settlement, which migrated bodily to the new location. Having reached the designated spot, the members did not then separate, but built their log houses together, often in the shape of a fort. Thus instead of isolated individual farms, as in the Middle West, there grew up a system of compact village communities. The cause was twofold. "When the settlers first occupied the land, it was necessary for them to remain in communities sufficiently large to repel Indian attacks and it was a policy of the church to encourage the building of compact towns rather than detached ranches, thereby enabling the people to meet more often socially — an antidote for nostalgia and a great assistance in maintaining interest in the church."[1] The effect of such a system was a more sensitive community consciousness, greater cultural activity, and an easier adaptability to follow leadership in a common enterprise. The leadership was ready at hand in the ecclesiastical officers, and the peculiar physiographical and climatic conditions of the new country soon demonstrated that common and united effort was essential if the people wished to survive.

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[1] "In California, in Colorado, in Nevada, in Idaho, and in Montana, mining, rather than agriculture, was the motive which induced the original settlement by Americans and irrigation grew up only as an adjunct to the mining camp. In Wyoming, . . . stock raising was the first pursuit. . . . In Washington and Oregon the first settlements were made along the humid coast. . . . But in Utah the motive was home building and the pursuit was agriculture for its own sake." William E. Smythe, The Conquest of Arid America, New York, 1905. pp. 51–52.

In the very nature of things this first common effort had to be agricultural. The immediate need was to provide a food supply. The pioneers had brought only a meager store of provisions with them, because of their hasty enforced departure from Illinois. The hazardous journey of three months across a thousand miles of prairie precluded any reliance upon the East for sustenance, nor did the Mormons, remembering their recent experiences, wish to be thus dependent. They must feed themselves or starve. Accordingly, Brigham Young advised his co-religionists to attach themselves at once to the land and raise their own food. He exhorted them strictly not to attempt at first any mining enterprises, for he realized that as conditions then existed such pursuits would separate and demoralize the people, thereby endangering the identity and permanence and even the temporary existence of Mormon colonization.[2] As a colonizer, facing a strictly practical question, he perceived what has since been so plainly evident to the sociologist and the historian — that the stability of character of any people goes with foothold on the soil.

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[1] R. S. Baker, "The Vitality of Mormonism," Century Magazine, June, 1904, p. 171.

[2] The Mormon people as a whole followed this advice undeviatingly. Obedient to orders, they paid no attention for many years to the vast mineral wealth lying in the mountains at their doors, but contented themselves with assuring their future by agriculture. It remained for subsequent non-Mormon settlers to open up the rich Utah mines. Later, however, Mormons entered the mining field and today among their number are many of the leading mining men in the state.

The vital need of food crops being so acute, the problem was reduced to one of production. And the new conditions made that an issue of such magnitude as to stagger a people less determined than the Mormons or a leader less resourceful than Brigham Young. Accustomed to the methods of farming used in the Mississippi Valley, they found here a mean annual rainfall of ten to twenty inches only. A new system of agriculture had to be devised; that system was irrigation. It is fairly certain that Brigham Young knew nothing of irrigation before reaching Utah. Whether he acquired a knowledge of it from the Indians, or indirectly from the Mexican Spaniards, or otherwise, is immaterial. The thing of importance is that it proved precisely the method to solve the problem which confronted the pioneers.

After the first experiment with irrigation proved successful in Salt Lake City in 1847, all the settlements made it the basis of their farming. When a colony had been located, the very first measure was the construction of the canals and ditches to carry the water from the mountain streams to the fields. In many instances it had to be brought a considerable distance, and only the simplest hand tools were available. The individual could not expect to cope with such a formidable task successfully. Only by the concerted effort of the whole community could the farmers secure the water needed to irrigate their crops. So " a destitute people, having no resources save the genius of their leader and the labor of their own hands, resolved to associate and organize their efforts to bring the water on, as the people of Holland were compelled to coöperate to keep the water out."[1] Thus the Mormons began the practice of that great system of coöperation which has since proved to be their economic salvation.

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[1] Charles Hillman Brough, Irrigation in Utah, pp. 12–13.

Acting as a unit, the whole colony built the irrigation system. First, the dams to store the water in an artificial reservoir, or the headgate to divert it, were constructed; next, the canal itself was dug; and finally, the ditches and subditches leading to the individual fields were made.[1] If the work was unduly extensive or difficult, all assisted in each of these separate phases, but usually some division of labor was possible. Generally the bishop of the town, who was the ecclesiastical executive officer and chief spiritual adviser, acted also as supervisor of this important practical part of colonizing. He it was who assigned the men to their various tasks and exercised a general oversight as to the entire operations. That such a method succeeded was due in no small part to the remarkable efficiency of the Mormon church organization[2] with its ingrained habit of implicit obedience to authority. Of the effect of this influence Professor Ely says: "Individualism was out of the question, and in Mormonism we find precisely the cohesive strength of religion needed at that juncture to secure economic success."[3] It was no uncommon thing, at an early day in Utah history, to hear the bishop in the Sunday services order a certain number of men and teams to report for work on the canal during the ensuing week. For the invariable answer to this summons economic necessity was perhaps responsible as well as religious training. In such a way the canals were provided.

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[1] The greatness of this task appears from the following description of irrigation by Brough: "The methods of irrigation pursued by these conquerors of the desert, unaided by capital or previous experience, were almost identical with those in vogue at the present day. Canals were run from the canyon out upon the more level land of the valleys and there sub-divided into branch canals, and these again divided into laterals leading to every farm so long as there was water to be distributed. Each farmer had canals leading from the main one to every field, and generally along the whole length of the upper side of each field. Each field had little furrows a foot or more apart and parallel with each other, running either lengthwise or crosswise or diagonally across as the slope of the land required. Into these furrows the water was turned, one or more at a time, as the quantity permitted, until it had flowed nearly to the other end, when it was turned into the next furrow, and so on until all were watered." Irrigation in Utah, pp. 9–10.

[2] "So far as I can judge from what I have seen, the organization of the Mormons is the most nearly perfect piece of social mechanism with which I have ever, in any way, come in contact, excepting alone the German army." R. T. Ely, "Economic Aspects of Mormonism," Harper's Magazine, April, 1903, p. 668.

[3] Ibid., p. 669.

It need hardly be said that the pioneers performed this labor without pay. Their method of procedure was not concerned with capital or wages. By the very exigencies of the situation there could be neither. The only capital they possessed consisted of their own united strength and of this they contributed in approximately equal shares. Each man could therefore justly anticipate a fair proportion of the only remuneration possible to hope for — namely, the use of the water from the completed irrigation system.

When the water was finally secured, the question of its distribution was settled without difficulty by the application of simple coöperative principles. Each man was allowed the use of the water in such quantity and for such a length of time as was proportionate to the labor he had performed in the construction of the canal. In calculating this the use of his horses or oxen was counted in, if he had any. The right to continue utilizing the proportion of water assigned was dependent upon whether the individual, with his land, could make what is now legally termed a "beneficial use" of it. If not, he must give up the unused surplus to others who needed it, the amount of compensation being based on the labor of the first in the original building. Similarly, when a man moved from the particular irrigation system, he disposed of his water right to those staying. At first the irrigators looked rather to the use of the water than to any vested interest in it; but when finally they secured legal title to it, as "shares of water," (computed either according to "second feet" or to the quantity needed to irrigate an acre), the previous relative distribution remained absolutely unchanged.

The general result was a practically equal division of water rights. Several causes combined to bring this about. In the first place, as has already been suggested, the coöperators all did substantially the same amount of work in the same time, because, by reason of their universal poverty, no one was equipped to do more than the man at his side. Again, they dreaded a monopoly of the water, for it was clear that their ability to farm depended upon each individual possessing the right to utilize it. Finally, Brigham Young had inaugurated a system of land ownership which tended towards an equitable result in the ownership of the water. Under his plan each man was to receive a tract of land no larger than he could farm by the most intensive cultivation. Accordingly, when Salt Lake City had been laid out into squares, or "blocks," of equal size (the same plan was subsequently followed elsewhere) each containing ten acres, the settlers received their land on this basis. In the center of the town a few blocks were divided into lots of one and a quarter acres, these to be owned by merchants and professional men with little time for any form of agriculture except gardening, altho at first such classes constituted a negligible part of the social body. Adjoining the center blocks was a tier in which the lots were of five acres, and formed the homes of artisans, mechanics, and laboring men, who, by devoting odd moments from their regular occupations to the cultivation of their land, could materially supplement their income. On the outside, in the "Big Field," lay the real farms. Varying in extent from ten to thirty acres, they were alloted to the owner according to the number and working capacity of his family. Those who received the larger land holdings were expected to work a proportionately longer time on the canals. The outcome was not only an equitable division of the realty, but also an assurance that everyone, either by vocation or avocation, should till the soil. And since, in the beginning, the church authority was supreme, the plan was rigidly carried out. Combined with the dread of water monopoly and the general equality of laboring capacity, it tended inevitably toward an equal distribution of irrigation rights.

But did the plan of distribution reach the end its sponsors anticipated ? Did it actually work out fairly, as any coöperative scheme should ? What the people themselves thought of it is best shown from the fact that they have since utilized practically no other plan. Only the coöperative method has ever been popular in Utah. In neighboring states foreign capital has often been induced to construct irrigation plants with a view solely to selling the water to the farmers. Newell comments on the failure of such enterprises in Utah as follows: "There are very few large structures built by capital obtained outside the state and so far as can be ascertained, all investments of this character have been financially unsuccessful."[1] Universal acceptance of coöperation would not long have continued if the people had not remained convinced of its inherent fairness as well as its practicability. If defects existed, capable of being exploited by the more shrewd to their advantage and the subsequent detriment of others, none of the coöperators perceived them. "If the Mormon leaders," says Smythe, "had desired to organize their industrial life in a way to make large private fortunes for themselves, no single item in the list of Utah's resources would have offered a better chance for speculation than the water supply. It was perfectly feasible under the law for private individuals or companies to appropriate these waters, construct canals, sell water rights, and collect annual rental. By adopting this method, which widely prevails in other western states, they could have laid every field, orchard, and garden — every individual and family — under tribute to them and their descendants forever." [1] Yet not a single instance of such injustice has ever been pointed out. Indeed the very satisfaction of the people with their system, together with the advice of the church to avoid law suits and its practice of arbitrating disputes among its members, led to the rather curious result that the fundamental principles of irrigation law were formulated in California; altho irrigation was not applied in that state until 1849, two years later than among the Mormons.

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[1] Newell, Irrigation in the United States, p. 355.

Of the practicability of the Utah plan the results furnish the most satisfactory test. Beginning with no capital whatever, inexperienced in the new kind of agriculture, entirely out of communication with the rest of the world, the pioneers in an incredibly short time had constructed irrigation systems the extent and value of which dispel all doubts as to the feasibility of the coöperative method. The following statistics Bancroft gives for a period three years before the first railroad reached Utah and eighteen years after the arrival of the first settlers: "In 1865, 277 [canals] had already been constructed at a cost, including dams, of $1,766,939, with a total length of 1,043 miles, irrigating 153,949 acres, and there were others in progress at this date the cost of which was estimated at $877,730." [2] Finally it can be stated that the Mormons at the present time continue to utilize in large measure the identical means of securing irrigation water as at first. Long continued use and impracticability seldom go together.

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[1] Conquest of Arid America, p. 59.

[2] Bancroft, History of Utah, San Francisco, 1890, p. 722.

While the acquisition of water furnished the principal reason for associated endeavor in the colonization of Utah, it was by no means the only one. In exactly the same manner the logs from the canyons and the sun-dried adobes were obtained with which to build the houses. Similarly, the community constructed the usual palisade for protection against the Indians. Last, but most important, coöperation made it possible to put up at once, as was universally the case, the town meeting house, which served alike for religious worship, civil government, amusement center, and schoolhouse.

It is perhaps open to controversy whether the first Mormon system conforms with the usual technical requirements of a coöperative society. Certainly there existed no formal associative body as such. The colonists acted, not in pursuance of a definite code of rules and regulations previously drawn up, but because, with their nature and ideals and under their environment, their course was the natural and logical one to follow. But what the initial effort at coöperation lacked in formality, it made up, as has been shown, in inherent strength, adaptability, and efficiency. Determined as much by economic need as by conscious planning, a practical rather than a theoretical scheme, it nevertheless served its purpose effectively and completely. Its object was to support a people and furnish them a home; it succeeded in attaining that object. Despite its informality, this first type of Mormon coöperation approached more nearly to coöperative ideals than either of the stages which followed. It is fairly within reason and the facts of the case to conclude that it possesses the attributes which Holyoake sets out as essential to true coöperation — namely, it "commences in persuasion, it proceeds by consent, it accomplishes its ends by common efforts, it incurs mutual risks, intending that all its members shall mutually and proportionately share the benefits secured." [1]

II

The second phase of coöperation among the Mormons was evidenced in the establishment of coöperative stores. For a people whose whole attempt to settle the territory was based on mutual assistance, the transition from united effort in colonization to associative organization in commerce was but a logical development. The change was in no wise perplexing to them; should not the same principles of coöperation which experience had demonstrated to be so effective in founding their communities prove equally desirable when applied to trade? This is precisely what happened. But a clear conception of the Mormon coöperative stores can hardly be hoped for unless they are viewed in relation to the background of early Utah commercial history.

In the very nature of things commerce was nonexistent at first. The primal necessity was to take measures to survive; and, beyond that, the few needful exchanges of commodities were effected by barter. The isolation of the pioneers added another factor. No money was to be found, and, in any case it would have been valueless for lack of purchasing power. But as the settlements became more firmly established, immediate wants were satisfied, and a scant surplus of food supplies came into existence. This furnished a medium with which to trade for other needed articles and also a commodity to sell. But who could buy? Purchasers appeared among the new immigrants, composed of recently arrived co-religionists. Moreover, a steady stream of gold seekers passed through Salt Lake City on the way overland to California. These people gladly gave the best of their adequate supply of eastern goods for Utah foodstuffs, or else paid the highest prices, in order to hasten their arrival in the modern El Dorado. This traffic led to the establishment, in 1849, by two non-Mormons, of the first store in Utah. From this time forward commercial development was more rapid. But aside from the few local products, the whole quantity of goods had to be freighted across the plains. Naturally, this gave rise to extremely high prices and, at the very best, a precarious supply. Finally, the first transcontinental railroad, the Union Pacific, reached the construction stage, and by 1868 was ready to enter Utah. At this point the Mormons set up their great system of coöperative stores.

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[1] History of Coöperation in England, vol. i, p. 2.

The first attempt was an isolated one, typical of the others, but virtually unconnected with them. It is worthy of notice because of its priority and because of the peculiar conditions which gave rise to it. While Israel Evans of Lehi was in England on a mission from 1853 to 1857 (the Mormon Church has maintained an active propaganda abroad since its incorporation), he came in contact with the English coöperative stores and made a study of them. Upon his return home he announced his belief that the scheme could be installed among his own people to great advantage. As a result, an organization was effected under the name of Lehi Union Exchange, supposedly of the Rochdale type. With a capital of but $350, divided into shares of $25 each, and distributed among the maximum number of shareholders, it opened its doors for business on July 23, 1868, the first coöperative store in the West. The enterprise met with immediate success, so much so that at the end of the first six months a dividend of $28.20 per share was declared.[1] But this initial prosperity did not endure, and the following year the Exchange was merged into the state-wide structure of coöperative stores which in the meantime had been built.

The very foundation of this structure was the Zion's Coöperative Mercantile Institution, familiarly called the " Z. C. M. I." The leaders of the Mormon people established this organization by their own personal counsel and action, supervised its conduct and development, and directed its affairs. It served as the great prototype to all the smaller stores throughout the Mormon domain and was closely connected with them by business ties. It becomes essential, therefore, to know the forces and facts which brought the concern into being, for without them a correct understanding of commercial coöperation in Utah is impossible.

In defining the causes which led up to the founding of Zion's Coöperative Mercantile Institution, little assistance need be expected from the few investigations thus far accorded the matter, because they are so wholly at variance with each other. But whatever their intrinsic merit, they at least furnish divergent paths of approach to the problem, so they must briefly be considered.

What may fairly be termed the non-partisan view is set forth by Tullidge in his *History of Salt Lake City.* At the time of writing, the author had withdrawn from the Mormon Church, but still retained the confidence of his former associates. He says:

> It must be confessed that Utah commerce, before the opening of our mines, gave all the money to a few hands. And this was one of

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[1] A store which paid 113 per cent dividend on shares — not according to the amount of goods purchased — might well have astonished the Rochdale coöperators, after whose system it purported to be modeled, but such was the fact.

> the immediate causes that brought forth Z. C. M. I.; as the leaders of the Church conceived it to be their broad duty, at length, to construct for the community a broader and more equitable system of commercial existence. . . . In 1868–69 the Mormon Church was brought face to face with implacable necessities which seemed about to weaken her. . . . Should the vast money agencies which had so grown up among her people, in the country which she had settled, at length overwhelm her; or should she, by combinations of her own, place these agencies at her back and preserve her supreme potency? Brigham Young answered these vital questions in the organisation of the Z. C. M. I.[1]

The distinctly anti-Mormon opinion is found in Stenhouse's *Rocky Mountain Saints*. Stenhouse was an apostate from the Church and his book is a bitter arraignment of all things Mormon. He states:

> . . . Later in the same year the Prophet conceived the idea of uniting all the Mormon merchants in one grand, coöperative, commercial scheme, by which he hoped finally to be able to "freeze out the Gentiles" who were then in business, and discourage those who might have entertained the idea of coming there when the railroad was finished. . . . He contemplated one general, wholesale, cooperative store that would supply branch stores in every ward in the city and in the country with all the goods that would be necessary for the peoples' consumption.[2]

Whitney in his *History of Utah* presents the pro-Mormon view of the matter. The author, who was a prominent official in the Mormon Church, makes the following explanation:

> Meantime the railway was becoming an accomplished fact. . . . For years the burden of the Tabernacle discourses had been: "Trade with and sustain your friends; let your enemies have none of your substance with which to work your downfall." It is true that up to this time the line had not been religiously drawn, for among the Gentile merchants were many who in their social and business intercourse with the Saints had won their confidence and were numbered among their friends. But as the railway project became more tangible there were threats and rumors, at first vague but afterwards

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[1] Edward W. Tullidge, History of Salt Lake City. Printed "by authority of the City Council and under the supervision of a committee appointed by the Council and the author," Salt Lake City, 1886, pp. 383–84.

[2] T. B. H. Stenhouse, The Rocky Mountain Saints, New York, 1873, pp. 625–26.

> definite and openly avowed, that that great civilizing agency would be used to break in pieces the Mormon Church. . . . Hence the instructions of the leading men . . . became more and more positive as the locomotive drew near, . . . that "a Latter-day Saint should not trade with an outsider." . . .
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> The enunciation of the exclusive commercial policy in the latter part of 1868 must be understood as only a preparatory step to the introduction of other measures. Among these nothing was more prominent than the establishment of coöperation.[1]

In one thing at least these excerpts concur; and that is the belief of both Mormon and non-Mormon that the advent of the railroad would effect a serious change in the status of commercial relations. There is evidence tending to prove that on the part of the Mormons it was feared the change would be inimical to them, for they suspected their local enemies of a design to utilize the new situation to crush out Mormonism entirely.[2] Whether these fears were justified is not important here. For the present purpose it is sufficient that such trepidation existed, and that it was translated to some extent into economic action. But granting existence of these feelings, does it follow, as the writers quoted seem to infer, that they were the main reason for the establishment of the Z. C. M. I?

Such a ground seems entirely too narrow to account for the actual results; the ultimate, moving cause must be sought elsewhere. For twenty years the people had now practised coöperation. With its aid they had founded their colonies; by its use they had constructed their whole irrigation system. Their entire experience with associated endeavor had witnessed only the most beneficial results, consequently the utmost confidence prevailed in the doctrine. To the most casual observer the peculiar genius of the Mormon people for the system, and the adaptability of the conditions to it, must have been patent. Is it strange, then, that Brigham Young should have proposed the extension of coöperation into the commercial field ? Or that the people, in the light of the immediate past, so readily responded ? The conclusion is inevitable. Perhaps the Mormon fear of a remotely possible economic subserviency gave the immediate impulse toward the establishment of the Z. C. M. I.; possibly too the movement was hastened by the success of the Lehi undertaking; and it is within the bounds of probability that Brigham Young may have been influenced by personal knowledge of consumers' retail associations in England, since he had spent considerable time there about 1846. But if these factors were influential at all, it was only as relatively unimportant concurring causes. The real proximate cause, which fully and logically accounts for establishing the Z. C. M. I., is found in the experience of the people with coöperation and its palpably evident fitness for the existing conditions.

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[1] Orson F. Whitney, History of Utah, Salt Lake City, 1893, vol. ii, pp. 278, 279, 280.

[2] See, for example, G. Q. Cannon's remarks, Journal of Discourses (a compilation of Mormon sermons), October 7, 1868, vol. xii, p. 290.

See also remarks of Orson Pratt, October 6, 1868, ibid., vol. xii, pp. 305–07; and of Brigham Young, ibid., vol. xii, pp. 301, 310, 312.

A survey of the actual facts of the establishment of the institution bears out the correctness of this conclusion.

Agitation of the Mormon leaders for a " self-sustaining " people was the initial step in the movement. It got under way in the early fall of 1868, and, when the semi-annual conference met in October, formed the principal topic of discussion. Finally, Brigham Young presented the issue to the people in the form of a resolution, which was adopted in the usual Mormon fashion.[1] Somewhat later he explained his intentions as follows:

> What I have in mind with regard to this coöperative business is this: — There are very few people who cannot get $25.00 to put into

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[1] " The question is not whether we have the right to be self-sustaining or not, but will we be self-sustaining. That is the question and we say we will be. What do you

> one of these coöperative stores. There are even hundreds and thousands of women, who, by prudence, can obtain this sum. And we say to you, put your capital into one of these stores. What for? . . . [They] are instituted to give the poor a little advantage as well as the rich.[1]

But it needed little persuasion to win approval for the proposed scheme. In less than ten days after the conference sufficient stockholders had been secured to make possible a temporary organization. This was effected on October 16, 1868, Brigham Young being elected president and leading Mormon officials filling the directorate. With such a formidable array of officers the sponsors set to work to secure further support. Their procedure in obtaining it was different from that common to previous English coöperative systems. In contradistinction to the Rochdale stores, which accepted only subscriptions in money, the promoters of the Z. C. M. I. urged all Mormon merchants in Salt Lake City to become shareholders, and issued certificates in exchange for their goods and buildings on hand. By this method a stock of merchandise valued at several hundred thousand dollars was obtained, in addition to cash from subscribers who were not merchants. During the ensuing winter the project lagged in Salt Lake City, altho smaller " coöps " sprang into existence in several of the settlements at once, notably in Provo and St. George. But by early spring preparations had been completed, and on March 1, 1869, the Zion's Coöperative Mercantile Institution (called at first Zion's Wholesale Coöperative Store), opened its doors for business. This occurred in one of the stores exchanged with the company for stock. Shortly thereafter other branches

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say, brethren and sisters? All of you who say that we will be a self-sustaining people signify it by the show of your right hands. (The motion was put and unanimously carried.)" October 8, 1868. Journal of Discourses, vol. xii, p. 286.

[1] April 6, 1869, ibid., p. 373.

began operations in similarly transferred establishments. Over all these was placed the All-seeing Eye and the motto, "Holiness to the Lord." Within a month the institution had a stock of goods on hand worth $450,000. Finally, on December 1, 1870, the store was formally incorporated with a capital stock of $220,000. The preamble of the articles of incorporation read:

> The inhabitants of Utah, convinced of the impolicy of leaving the trade and commerce of their Territory to be conducted by strangers, have resolved, in public meeting assembled, to unite in a system of coöperation for the transaction of their own business, and for the better accomplishment of this purpose have adopted the following constitution:[1]

Z. C. M. I. prospered from the beginning, the first year's sales amounting to $1,230,000. Altho most of the goods exchanged for stock were taken at the high rate current in the territory before the railroad reached Utah, the venture flourished nevertheless. This was not only a tribute to the principles upon which the store purported to be based, but also to the sagacity of its managers, who in general were none other than the merchants who had traded their goods into the new concern. The vitality of the Institution may be judged from the fact that in the panic year of 1873 it boldly began the construction of what was in those times an unusually large building, which was completed in 1875, bringing the heretofore scattered branches into one plant. In 1895 the company was re-incorporated with a capital stock of $1,070,000. Somewhat later the spacious building now occupied by the home store was erected.

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[1] Zion's Coöperative Mercantile Institution: Agreement, Order, Certificate of Incorporation, and By-Laws. Published in Deseret News Book Store, 1870.

Compare this with the objects of the Rochdale Equitable Pioneers: "The objects of this society are to form arrangements for the pecuniary benefit and improvement of the social and domestic conditions of its members, by raising a sufficient amount of capital, in shares of one pound each, to bring into operation the following plans and arrangements." Catherine Webb, Industrial Coöperation (5 ed.), p. 68.

But by far the most significant consequence of establishing the Z. C. M. I. was the universal adoption of mercantile coöperation throughout the territory of Utah. In practically every Mormon city, town, and village a coöperative store was started. The movement spread with unexampled rapidity, the method being, curiously enough, from the central body to the local branches — just opposite to the British line of development. The shares in each "coöp" were held by local residents, who exercised entire control of the management, but sentimentally at least they looked to the Z. C. M. I. as the head of their system, and for the most part at first secured their supplies from it. Wherever the colonization projects of the Latter-day Saints were carried, there was to be found a local "coöp." At the present time most, perhaps, of the Mormon settlements in Utah, western Colorado, Arizona, New Mexico, southern Nevada, Idaho, southwestern Wyoming, Alberta in Canada, and Sonora and Chihuahua in Mexico have coöperative stores. A conservative estimate of their number would be approximately 150.[1] A few of these stores have ceased to operate. In the enthusiasm of initial success several proposed venturing into milling and manufacturing, but in general nothing came of it. A number were wrecked by this very exuberance, but the management of practically all of them was so conservative and sound that they still survive.

How do these outlying coöperative stores compare in plan of organization and in the manner of conducting business with well-recognized systems elsewhere, such as the Rochdale plan? Capital was provided by the stockholders in shares usually of $25, but not uncommonly of $10, in order to bring the stock within almost universal reach. In general it was sought to obtain the head of each family as a shareholder. Goods were sold at market price, but at first a not inconsiderable part of the business was the exchange of dry goods for farm produce. In such transactions some of the "coöps" issued their own paper script which was redeemable later in merchandise. A few stores accepted tithing script, from the church tithing offices, in payment. There seems to have been no fixed rule as to giving credit, but the practice was much more common in later years than in the beginning. The close religious bond between the Mormons effectively eliminated any practice of short weights or measures, or the wilful sale of impure goods.

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[1] This is the number which the Z. C. M. I. gives, as obtained from their business dealings with the smaller stores. Assistant Church Historian Andrew Jenson, who, among Mormon officials, is best qualified to speak on the matter, informs the writer that, while he does not doubt the reliability of this estimate, he is inclined to believe there were certainly not more than one hundred and fifty small stores and the number might very well have been less.

Thus far there is no dissimilarity between the Mormon and Rochdale systems. It is in the manner of dividing profits that the greatest apparent difference is found. So far as can be ascertained, profits in the Utah coöperative stores were always distributed on the basis of the shares of stock held and not according to the amount of goods bought. The Rochdale device of giving metallic disks with each purchase in order to determine, at stated periods, the total quantity of trading done, was unknown among the Mormons. Nor was any fixed charge paid to capital other than the dividends. (As a matter of fact, the dividend returns have usually been at the current rate of interest in the West, from 6 per cent to 9 per cent; so they have approximated a fixed amount.) But this deviation in division of profits from the English method did not necessarily mean that different results were obtained.

In the first place, the shares in the store, as to most cases, were almost evenly divided among the members. Again, practically all the stockholders were farmers, each facing the frontier problems and conditions common to his neighbors. Little variation therefore occurred in the amount and kind of goods each had to buy from the store. Hence, given a certain amount of profit, substantially the same amount would be apportioned to each coöperator whether the division was made on shares or on purchases. This was particularly true in the years immediately following the establishment of coöperation, but increasingly less in after years, when the economic conditions of individuals became more diversified.

The method of voting was another characteristic in which the Mormon stores differed from the British type. Voting has always been based on shares, as in ordinary joint stock corporations. In the beginning this amounted virtually to "one man, one vote," because the members held the same amount of shares. With the lapse of time and the passing of uniformity of shareholding in the association, equality of voting power also ceased.

No difference is perceivable between the Utah and Rochdale types as to management. The Mormon coöperators periodically elected a board of directors from their own number to control the company's general policy and a manager to have charge of the business transactions. Full and complete reports were rendered to the members at stated intervals.

From this comparison it is evident that the Mormon coöperative stores differed from the English consumers' retail associations in certain aspects of organization and method. But the variation was one of form rather than of substance. On the whole, each used about the same means to accomplish the same ends — a widespread ownership of the store by the purchasers of its goods, and an equitable division of its profits. This was particularly true of the Utah concerns in the beginning. With an appreciable part of the population as stockholders in the town "coöp," it represented, not a business under the control of a single proprietor, nor one dominated by a syndicate composed only of a few members, but the concerted effort of a multitude of small owners to carry on trade for their common benefit. It seems but reasonable to conclude that the Mormon coöperative institutions possess the characteristics common to the Rochdale type. However that may be, there is no gainsaying that the local "coöps" furnished the most suitable means for satisfying the commercial needs of the times. By their use a people with the most meager capital, acting jointly, was able to supply the settlements with merchandise to an extent not possible of attainment otherwise, as conditions then existed; and at the same time to reserve all the profits to themselves. No matter how the Mormon system be classified in comparison with other types of coöperation, its effectiveness for the purpose at hand remains indisputable.

After the lapse of half a century certain changes took place. The idea of connecting all the local establishments with the Z. C. M. I. has long been abandoned, and today several other wholesale houses in Utah are close competitors for their patronage. As to their methods of conducting business, there has certainly been some departure from early standards. To a limited degree the shares of the country institutions have come to be concentrated in the hands of the more shrewd, resourceful, and powerful stockholders. The existence of such a tendency is acknowledged even by the most ardent advocates of the system. In so far as such a change has occurred, the real coöperative characteristics of the stores have been destroyed, because the very essence of coöperation in the early Mormon stores lay in their ownership by a large number of shareholders who had each contributed about the same amount of capital. But the extent of these inroads on the early system must not be exaggerated. Nearly all the stores still have an extensive list of stockholders, so many in fact that it is probably not an overstatement of the present situation to assert that the outlying stores retain most of the benefits intended by their founders.

Can a similar claim be made for the Z. C. M. I.? Beyond doubt it is a successful business enterprise. Its capital still remains at $1,070,000, but its operations have reached gigantic proportions. The shares, which were originally subscribed at $100, today have a market value of $389. The stockholders now number approximately 650. From the beginning dividends on stock average 11 per cent, but at present are on a 20 per cent basis. To date the company has paid in total dividends $5,281,628.15. It employs 700 people, whose wages make an annual expenditure of $600,000. Sales for the fiscal year 1915–16 amounted to $6,160,698, and total sales to date reach the sum of $176,500,000. Besides conducting the manifold activities of a modern department store, together with an extensive wholesale business, the Z. C. M. I. manufactures shoes and duck clothing. The capacity of this one department is 500 pairs of shoes and 100 dozen "overalls" daily, the raw materials for which cost $140,000 a year. The stock still remains mostly in Mormon hands, altho some of the shares infrequently appearing on the market have been acquired by non-members of the Church. Joseph

F. Smith, president of the Church, is also president of the Institution; and with two exceptions his ecclesiastical predecessors have likewise been at the head of the company.[1] Perhaps most of the trade is still carried on with Latter-day Saints, but the patronage of the store, both in retail and wholesale, is far from being exclusively with Mormons.

Granting the financial success of the Z. C. M. I., there still remains the question whether it is, in fact, as coöperative as its name implies. Critics have not hesitated to assert that it is not in the slightest degree coöperative. Stenhouse regarded it merely as Brigham Young's private weapon to drive the Gentiles out of business with the ultimate purpose of clearing them out of the territory.[2] Albert E. Wilson, writing in a German periodical, designates it a "combine" and "trust" and argues that "on account of its organization and the method of dividing profits, we must deny the Zion's Coöperative Mercantile Institution its coöperative character."[3] Even Whitney concedes:

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[1] The eighth article of the present charter of the Z. C. M. I. states: "The directors and officers of this corporation shall be elected by ballot, at the general meeting of the stockholders, to be held on the fifth day of April in each year, and the persons receiving a majority of the votes cast at such meeting, shall be held and declared to be elected. . . . Each stockholder shall be entitled to as many votes as he holds shares of capital stock. . . ." Zion's Coöperative Mercantile Institution: Articles of Re-incorporation, etc. Salt Lake City, Utah. George Q. Cannon & Sons Co., Printers, 1895, p. 5.

[2] The Rocky Mountain Saints, pp. 626–27.

If such were the purpose, it proved a signal failure, for Bancroft states (History of Utah, p. 654): "Soon, however, even the Mormons began to disregard their leaders against trading with gentiles or apostates. The spell was broken and during the Conference of 1870 the stores of the latter, and especially of the Walker Brothers, were so crowded with purchasers that it was impossible for them to serve their patrons." One would suspect that if the Mormons really started the Z. C. M. I. to rid themselves of outside competition, they would have made a more determined effort than these facts indicate, because in other respects at that time they exhibited no lack of resource or power.

[3] "Soweit diese Angaben zutreffen würden sie die Gestalt zu einer gewöhnlichen Aktiengesellschaft stempeln. Angesichts der Tatsache, dass die Einzelgeschäfte schon vorher bestanden, haben wir es seit 1868 mit einer Fusion oder einem Trust in Utah zu tun. . . . Angesichts ihrer Organisation und der Methoden der Gewinnverteilung müssen wir aber der Zion's Coöperative Mercantile Institution den genossenschaftlichen Charakter absprechen." "Gemeinwirtschaft und Unternehmungsformen im Mormonenstaat," Jahrbuch für Gesetzgebung, 31 Jahrg., 89–139, 1907.

"It is true that a large proportion of the stock has been concentrated in a few hands and that the original idea of having all the people shareholders has in a certain sense been defeated."[1] How do these opinions conform with the facts? The facts are simple enough. The original articles of incorporation, published by the promoters in pamphlet form in 1870, contain the decisive information. Section 24 of the articles recites:

> The persons whose names and residences are as hereinbefore set forth, have each subscribed for the number of shares of the capital stock of said Zion's Coöperative Mercantile Institution as is hereinafter set opposite their respective names and have paid for the same in full into the treasury of said Institution, and at the par value thereof. — The names and numbers of shares being as follows, viz.:

Brigham Young	772	$77,200
George A. Smith	3	300
William Jennings	790	79,000
William H. Hooper	110	11,000
David Day	100	10,000
Brigham Young, Jr.	53	5,300
Joseph Woodmansee	50	5,000[2]

Then follow fourteen other shareholders only one of whom owns as many as 21 shares. The total is 1990 shares. From these statistics the rather surprising fact is disclosed that four men possessed 1772 of the 1990 shares which constituted the company's stock at its incorporation.

In this connection it is to be noted that the Z. C. M. I., like the smaller retail stores, divided profits on the basis of shares of stock held and not according to the amount of purchases made. Voting similarly was based on shares and not determined by the principle "one man, one vote." But the very thing was lacking in the parent institution which gave the smaller establishments their distinctive coöperative aspect; and that was a multiplicity of small owners holding approximately the same amount of stock. At its inception, therefore, the Z. C. M. I. was not a real coöperative store, as that designation is usually understood. Nor did the situation change materially with the lapse of time. In 1895 the company issued copies of its articles of re-incorporation, which contain the names and holdings of its stockholders at that time, twenty-six years after its establishment. They numbered only 40, of whom five owned 8348 of the 10,770 shares, one of the five, however, holding 5833 shares as trustee.[1] The fact that there are today 650 stockholders shows that the ownership has lately become more distributed instead of concentrated, but certainly not to a sufficient extent to make the Z. C. M. I. a coöperative store of the Rochdale type.

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[1] History of Utah, vol. ii, p. 294.

[2] Zion's Coöperative Mercantile Institution: Agreement, Order, Certificate of Incorporation, and By-Laws. Published in Deseret News Book Store, 1870, p. 7.

Tullidge (History of Salt Lake City, p. 726), says there is only one copy of this pamphlet in existence, and that is "preserved by the secretary of the Institution." But the writer found another copy in the Harvard Library, from which quotations in this article are made.

The Institution is entitled to more credit, however, than this classification accords it. Even if it lacked coöperative organization and methods, its owners nevertheless maintained a coöperative aim. The most cynical observer will hardly deny the immense good it has done for the people of the state of all classes and creeds. Not only has it provided goods at reasonable prices when local conditions made it perfectly easy to do otherwise, but it has by that very practice forced other merchants to do the same thing, to the ultimate benefit of the purchaser. Five years after its establishment the founders of Z. C. M. I. issued a public statement in which they said: "From its foundation until the present it has never advanced the price of any article because of its scarcity."[1] The same statement might be made today with equal truth.

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[1] Zion's Coöperative Mercantile Institution: Articles of Re-incorporation, etc., Salt Lake City, Utah. George Q. Cannon & Sons Co., Printers, 1895, pp. 7–8.

Whether the Z. C. M. I. be regarded as a genuine coöperative store or not, that character, as has already been pointed out, cannot be denied the 150 smaller stores which followed it throughout Utah and the adjoining states. They form a body of evidence of such reliability and of such extent as to place beyond any reasonable doubt the success attained by the Mormons in commercial coöperation. It is probably true that this second phase of associative activity was not as truly coöperative as the first united effort in colonization. Yet the Mormon "coöps," existing still with but slightly modified attributes, possessing much the same aims, methods, and functions as at first, and with their original usefulness not seriously impaired, stand today a monument to the vitality of the principles upon which they were based.

III

The third type of coöperation among the Mormons is industrial. Just as the concerted effort in colonization laid the foundation for coöperative stores, so the success of the latter led up to the establishment of associative industrial enterprise. Much the same idea of self-dependence which was noted as the immediate impetus for starting the Z. C. M. I. lay back of the entrance into the industrial field. The Mormon people conceived it to be the wisest plan to rely, as completely as possible, upon their own manufactures. Efficient irrigation systems and prosperous coöperative stores bore convincing testimony of the practicability of united effort;

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[1] Address to Latter-day Saints, July 10, 1875, p. 5.

while the almost unrivaled resources of the state, both in variety and in extent, together with an adequate labor supply from the constantly increasing stream of Mormon converts, made up the elements to which the same principles could be applied in industry. So a campaign was instituted which in vigor and effect has steadily increased up to the present, a campaign centered around the slogan, " Patronize home industry." Not only in public gatherings has this doctrine been advocated, but repeatedly from every Mormon pulpit in the Rocky Mountains. The result is the formation of a vast system of industries.

Perhaps the first attempt of any consequence was the establishment of a number of woolen mills. To stimulate this industry the legislature, in 1869, had appropriated $5,000 with which to purchase improved breeds of sheep and bring them into the territory. The most notable concern was the Provo Woolen Mills. To quote Bancroft: " It was built in 1872, on the coöperative plan, the people of Utah County being asked to contribute money or labor for the purpose and the material obtained at small cost. . . . For several years this factory was the largest west of the Missouri River." [1] By 1882 ten mills with an equipment of 120 looms and 15,000 spindles produced cloth to the value of $300,000; but this supplied only one-eighth of the local consumption, the balance of the wool from the 450,000 head of sheep being shipped east for manufacturing. Most of these factories have been closed for many years. Even the largest, at Provo, has only recently resumed operations, after having been sold to private capital.

The greatest of the Mormon financial enterprises was originated in 1890 — the beet sugar industry. As early as 1852 machinery had been purchased in France, freighted across the plains by ox teams, and set up in Salt Lake City in an effort to make sugar; but the attempt was premature. Over thirty-five years later several far-sighted financiers of Utah undertook an investigation into the two beet sugar factories then existing in the United States at Grand Island, Nebraska, and Oxnard, California. They deemed the industry practicable for the inter-mountain region, so they incorporated the Utah Sugar Company on September 11, 1889. The original stockholders numbered 28, and they furnished a capital of $15,000, divided into shares of $10 par value. The stock issue was then thrown open for the public and a spirited campaign commenced. Not only did the incorporators themselves urge the people to invest, but the Church leaders gave the new concern their enthusiastic approval. The response was widespread, the stockholders exceeding 700, many of whom were men and women of moderate and even of scanty means. Finally, when the success of the project hung in the balance, the Church itself granted a substantial sum for the purchase of stock. At a cost of $500,000 the first factory was constructed at Lehi, and by the summer of 1891 it was ready to commence operations. The initial campaign in the fall and winter of that year produced 1,000,000 pounds of refined (granulated) sugar from the first crop of sugar beets ever raised by irrigation. The factory has been operated at full capacity every year since.

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[1] History of Utah, pp. 731–32.

Particularly in the beginning, this industry offers an excellent example of the Mormon coöperative system and its benefits. The sugar company itself cultivated practically no beets, but relied on the near-by farmers for them, many of whom also owned stock in the company and therefore had a double financial interest in its success. Among the employees in the factory were also a considerable number of small shareholders; indeed, after the harvest was in, not a few of the farmers could obtain employment there. Besides improving their land by the intensive cultivation which the successful raising of sugar beets by irrigation requires, the farmers had an unfailing money market for their crop. This not only benefited them, but also indirectly the merchants and traders, by putting more money into circulation. Furthermore, a rise in land values always resulted. Thus in a variety of ways participants in the coöperative system prospered.

But matters remained in this desirable situation little more than a decade. In 1903 the company, encouraged by its past success and the promising future of the industry, entered upon a policy of expansion. It constructed new factories in northern Utah and in Idaho, formed a new corporation, the Idaho Sugar Company, and increased its own capital stock. (Later all the companies were merged into one, the present Utah-Idaho Sugar Company, with a capital stock of $10,000,000.) These operations did not escape the notice of powerful eastern financial interests, and shortly thereafter the American Sugar Refining Company secured a majority of the stock. To accomplish this result most of the small shareholders were induced, for profitable considerations it is true, to part with their holdings. The effect was to destroy the coöperative aspect of the industry; henceforth there was only a plain joint stock company. Nor was the original basis restored when, in 1914, Utah capital, of which the Mormon Church furnished part,[1] secured complete control of the company by buying out the eastern shareholders. It is now coöperative only to the extent that its operations are directed by men who originally sponsored the coöperative idea and are still presumably in favor of it, and only so far as approximately 2000 shareholders, the present number, make a $10,000,000 corporation coöperative. The beet sugar industry in the Great Basin, which had its origin in the Mormon coöperative system, has now developed, as is well known, to gigantic size.[1]

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[1] Charles W. Nibley, Presiding Bishop of the Church of Jesus Christ of Latter-day Saints, Facts about Sugar, Salt Lake City, Utah, June 17, 1916, pp. 10–11. (Bishop Nibley is the official who has direct charge of the Church's financial operations.)

A society of landed proprietors, such as made up the the population of Utah, would naturally be confronted with the problem of providing adequate agricultural implements. The Z. C. M. I. did not deal in farming tools and vehicles, so the feasibility of having a separate coöperative organization to supply these articles soon became apparent. In 1883, a $100,000 company was launched, the stock subscription being thrown open to the general public, as in other Mormon enterprises purporting to be coöperative. Up to 1902 the capital stock was increased annually, and by that time there were 500 shareholders. In that year the present Consolidated Wagon and Machine Company was incorporated. It is a $2,500,000 concern and its letter head

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[1] The following tabulation, based on a private letter from Mr. W. T. Piper, Assistant Secretary and Treasurer of the Utah-Idaho Sugar Company, shows the expansion of the original company:

Name of factory	State	Built	Capacity [a]
Lehi	Utah	1891	1165
Garland	"	1903	954
Idaho Falls	Idaho	1903	941
Sugar City	"	1904	894
Blackfoot	"	1904	866
Elsinore	Utah	1911	620
Payson	"	1913	709
Spanish Fork	"	1916	1000
West Jordan	"	1916	600
Brigham City	"	1916	600
Grants Pass	Oregon	1916	600
Yakima	Wash.	1917	600
Total			9549

In 1915 the company produced 174,929,800 pounds of refined, granulated sugar.

[a] Tons of beets per twenty-four hours.

carries the claim: "largest retail implement house in the world." Its total sales in the last year reached the sum of $2,750,000; and sales to date approximate $100,000,000. The company employs between 300 and 400 persons and maintains 50 branches in different parts of the intermountain country.[1] It has now about 700 stockholders, which means an average holding of almost $3600. From these statistics it appears that with the growth of the company has come an ownership increasingly more distributed, but there has never been any practice of allowing purchasers to share in the profits or the management. A more hopeful sign to the student of coöperation is the rapidly growing number of local farmers' consumers' organizations which deal directly with the manufacturer and purchase their implements, vehicles, and supplies at wholesale. According to announced plans, these associations follow the Rochdale system rather closely, since they pay a fixed return to capital, reserve a definite percentage of the profits for improvement of plant, and distribute the rest to buyers pro rata according to the amount of purchases made.

For a people who had adopted as a slogan and as a practice "Patronize home industry," it became increasingly evident each year that millions of dollars were being sent East for life insurance which might be kept at home. Accordingly, the Church authorities took the lead in organizing, in 1905, the Beneficial Life Insurance Company, capitalized at $100,000. Using the same well-established methods, a list of stockholders numbering 200 was obtained from all parts of the state. The capital was later enlarged to $200,000. The company has prospered from the beginning and today its business operations extend through ten western states. In the annual statement issued December 31, 1915, it reported gross assets of $1,465,440.45, surplus to policy holders of $264,961.09, and $16,577,044 of insurance in force. The present shareholders number approximately 100. This points to retrogression, rather than progress, along coöperative lines. Indeed it cannot be consistently claimed that this company is more coöperative in character than most of the other life insurance companies doing business in the state, and certainly not any more than the other two local companies. The Educational Director gives the following explanation of the present ownership of the company: "Of course the stock is placed on the open market and we have no way of keeping it scattered; nor has any attempt been made to concentrate beyond having sufficient of it in such shape that the President of the Company is able to guide its affairs without danger of conflicting interests interfering."[1]

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[1] From a private letter from Mr. George T. Odell, General Manager of the Consolidated Wagon & Machine Company.

The latest and most curious of the so-called coöperative concerns is the Hotel Utah. Impressed with the idea that the rapid growth of Salt Lake City warranted the maintenance of a modern hotel of metropolitan proportions and functions, the Utah Hotel Company was organized May 19, 1909, with a capital of $1,005,000. This with a bond issue of $1,000,000, made it possible to erect a $2,000,000 hotel. When completed, the building was leased to the Hotel Utah Operating Company, whose stockholders are practically the same as in the Hotel Company. From the original number of 72 stockholders at the time of incorporating, has now grown the present body of 85 shareholders. The hotel has prospered from the first, but the mere recital of these figures is sufficient to show that it is not a coöperative industry.[1]

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[1] From a private letter from Mr. John D. Giles, Educational Director of the Beneficial Life Insurance Company.

In none of these Mormon industries has there ever been any practice of dividing profits with purchasers. Nor, so far as known, has profit-sharing with employees in the form of extra wages in proportion to company earnings been customary with them. Profits have accrued solely to shareholders. All are highly successful business institutions which have performed an inestimable part in the commercial development of the state; but they are not coöperative. In comparison, therefore, with Mormon associated endeavors in colonization and in commerce, their so-called coöperation in the industrial field appears to disadvantage. Admittedly some industries tended towards coöperative methods at their inception; but there has been a steady trend away from such methods until today there remains among the Mormons not a single industry (as distinguished from the colonizing schemes and coöperative stores), which satisfies coöperative requirements.

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[1] Other companies in which the Mormon Church has been, or is at present, interested are the Inland Crystal Salt Company, the Utah State National Bank, Zion's Savings Bank and Trust Company, the Salt Lake and Los Angeles Railroad Company, Salt Air Beach Company, Salt Lake Knitting Company, Deseret News Publishing Company, the Salt Lake Theatre, the former Utah Light and Railway Company, and the Union Pacific Railroad. But as these are in no wise coöperative organizations, they are not considered here. A most interesting article, which does discuss them, is found in World's Work for December, 1902: "A Successful Coöperative Society," by Glen Miller. See also "Proceedings before the Committee on Privileges and Elections of the United States Senate in the Matter of the Protests against the Right of Honorable Reed Smoot, a Senator from the State of Utah, to Hold His Seat." 59th Congress, Senate Document 486, Washington, 1906, vol. i, pp. 81–87.

In Utah are also a comparatively large number of building and loan associations. But they are of a type common to the whole United States, and do not bear any distinct relation to Mormon coöperation. The small country banks in the state approach somewhat nearer to the usual Mormon coöperative type, but in general their organization and functions are similar to rural banks elsewhere.

IV

Such is the history of coöperation among the Mormons. It discloses an economic phenomenon not paralleled elsewhere, for the simple reason that history has not otherwise seen a combination made up of people like the Mormons and of conditions similar to those in the Great Basin. And its growth has been as remarkable as its uniqueness. From the digging of the first irrigation ditch it has developed into the present vast system of agriculture, commerce, and industry, with their ramifications over the entire arid West. Having traced this growth, it remains now, by way of conclusion, only to point out the chief factors responsible for it in the past, and to determine its present status.

Three elements have stood out as the underlying causes: first, the physiographic conditions; second, the religious organization of the Mormons; and third, Brigham Young.

Mention has already been made of the arid conditions in Utah which led the pioneers to evolve irrigation. This was, of course, only the inevitable response to environmental influence, a natural functioning of the stern law of necessity. The irrigation system grew up because it had to; and coöperation came into being because it was found to be the sole means of furnishing the canals which irrigation required.

But the mere physical conditions could not alone have been responsible for the coöperative system which arose. Other parts of the arid West have since been reclaimed without bringing forth such a method. The existence of coöperation in early Utah and its absence in neighboring states when physical conditions were identical must be accounted for by a difference in social structure. In near-by states the colonists acted individually and were not connected with each other by any particular interest, while in Utah there existed a compact social body, closely united by common ties and easily capable of being used as a vehicle to cope with general needs. This common bond was the peculiar church organization and religion of the Mormon people. With an organization particularly fitted for efficient united endeavor, with religious ideals which impelled them to assist each other in practical as well as spiritual matters, with an adaptability for following leadership which is the very basic foundation of successful coöperation, it was perfectly natural that they should associate together to provide their economic needs.[1]

If the Mormon leaders are to be given a measure of credit for instituting coöperation, by far the most of it is due to Brigham Young. He it was who perceived the ability of the Mormon people to become coöperators and rendered that ability concretely tangible. Shrewd, forceful, energetic, and far-sighted, he was preëminently fitted to lead his pioneer people. "Whatever else may be said of Brigham Young," remarks Ray Stannard Baker, "he was a great general, a magnetic leader of crude tho undeniable power, and a shrewd law giver. We may scout the idea that he was in truth a divine prophet, but we may scarcely deny him a large gift of the prophetic imagination. He was perhaps the grossest materialist of his time, but he got results."[2]

And now, finally, what shall be said of the present condition of Mormon coöperation? Is the superstructure of a kind with the foundation or of an entirely different type? Fifteen years ago Professor Ely was inclined to believe that the original aims had been somewhat lost sight of. "The present condition of coöperation among the Mormons," he says, "is one which indicates retrogression rather than progress, and it is not wholly encouraging to believers in coöperative principles."[1] It is hard to escape from this conclusion. Certainly the study of the three different stages of Mormon coöperation bears it out. In the first stage, that of colonization, coöperative standards were maintained; the second phase, which had to do with the retail stores, experienced a noticeable departure from characteristics generally found elsewhere in coöperative associations; while the final type, evidenced in the industrial field, was hardly coöperative at all. Yet to say that each successive stage moved farther away from coöperative requirements than its predecessor neither means that no coöperative enterprises remain among the Mormons, nor that the methods actually used were not skillfully adapted to accomplish the purposes at hand. It has already been pointed out that the Mormons in their colonizing schemes provide their irrigation systems in substantially the same manner as in pioneer times, by united endeavor. The numerous small retail stores are yet performing much the same rôle of commercial usefulness as at first. And it can hardly be denied that the Mormon industrial and commercial system, which largely originated in their coöperative schemes, has made them a prosperous and independent people. It is natural that the Mormons, viewing their attempts at coöperation in the light of economic results, are not disposed to be dissatisfied with them.

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[1] Amos G. Warner believed this to be the chief factor in accounting for their accomplishments. Three Phases of Coöperation in the West. American Economic Association Publications, 1887, vol. ii, No. 1, pp. 118–19.

[2] "The Vitality of Mormonism," Century Magazine, June, 1904, p. 165.

HAMILTON GARDNER.

HARVARD LAW SCHOOL.

[1] "Economic Aspects of Mormonism," Harper's Magazine, April, 1903, p. 671.

FLAX: THE FIBER AND SEED. A STUDY IN AGRICULTURAL CONTRASTS[1]

SUMMARY

The old culture and the new, 500. — The two groups of products, 501. — European fiber culture, 504. — Modern flaxseed farming, 504. — Pulling and rippling fiber, 506. — Harvesting flaxseed, 507. — Preparing fiber; retting, scutching, 508. — Attempts to apply machinery to fiber production, 514. — Machinery applied to flaxseed farming, 519. — Migrations of the flaxseed crop, 521. — Attempts to establish fiber production in the United States, 523. — A comparison of productive agencies, 524. — The reasons for separate production of fiber and seed, 525. — The principle of comparative advantage, 526.

Flax has been cultivated from time immemorial for the strong and enduring fibers of the plant. Out of these, prehistoric man first made his lines and nets, and later fashioned his clothing and household fabrics. Flax fiber, or "line" as it is commonly known, was the first spinning staple; and linens, supplemented by woolens in the colder climates, held the foremost position among the textiles until the industrial revolution of the eighteenth century. The use of flaxseed or linseed in industry is comparatively modern. Tho the medicinal and food values of the seed were known, the peculiar drying or filming property of the oil contained in it was not generally recognized until the fourteenth century. This important discovery made possible the rise of the art of oil painting in the Renaissance, and created an entirely new set of material demands. A new group of commodities then appeared gradually, and in time an essentially different branch of flax production. In surveying flax culture from its very beginning we find three periods. At first the plant was cultivated for fiber only. Then from the fourteenth century to the close of the eighteenth century it was still cultivated for fiber primarily, tho there was a secondary production of seed for oil from the same plants. Finally, after the industrial revolution, flax came to be grown for seed only, particularly in connection with the opening of new lands in this country. The older countries still continued to grow flax for fiber.

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[1] The writer has gathered much of his matter from observation and investigation prompted by the use of one of the flax products in manufacturing. The case of flax was clearly set forth twenty-eight years ago by Professor F. W. Taussig in "Some Aspects of the Tariff Question," vol. iii of this Journal. I am indebted to him for helpful criticism of this paper. Reference is made to the following books and papers: J. G. Wilkinson, Manners and Customs of Ancient Egyptians; F. Kellar, Lake Dwellings of Switzerland and Europe; A. J. Warden, The Linen Trade; A. S. Moore, Linen; E. A. Whitman, Flax Culture; U. S. Department of Agriculture, Fiber Investigation Reports; H. L. Bolley, Flax Bulletins, North Dakota Agricultural College; Flax Culture, Bulletin 274 U. S. Department of Agriculture.

Thus we now have two separate and distinct cultures, which appear to be confined closely to seats of production possessing certain natural or social advantages. The older countries of Europe have retained the ancient flax fiber production. The newer countries have developed the modern flaxseed farming. Between the new culture of flaxseed as a grain crop and the old culture of flax fiber as a garden and handicraft product, there are many contrasts interesting to the student of economics. This article will sketch some of the more striking features and examine the causes which seem to determine the source of supply of the varied commodities produced from the flax plant.

Of these there are two groups—the flax fiber products or linen textiles; and the paint and covering products of which linseed oil is the base. The first group comprises the time-honored and beautiful linens, damasks, lawns and cambrics, in addition to crash, bagging, nets, lines, thread and twine. The second —

the more modern and less familiar group — includes paints, varnishes, printing ink, oiled fabrics, oil cloth, linoleum, imitation and patent leather, waterproof clothing, oilskins and soap. The linseed products now form a larger item in the world's annual income than the linen textiles. At the close of the eighteenth century the situation was quite different. Then linseed oil was in little use, while linens were the universal textiles for personal and household use. The causes which brought about this revolution must be examined at some length.

There are several varieties of flax, but the blue-flowered flax plant, linum usitatissimum, yields all the fiber of commerce and nearly all the seed. It is an annual and can be grown in almost any climate. It is found in Alaska and Argentina, in the alluvial soil of Mesopotamia and the sandy steppes of Russia. Most of the seed of India is produced by another variety of flax — the yellow-flowered plant, linum trigynum. This has the same general characteristics of linum usitatissimum, from which the great bulk of flax products is derived. The plant has a pithy wooden stem covered with a fibrous bark. The bast fibers[1] are extracted by decomposing the plant, and when prepared become the "line" of commerce, so highly prized for spinning and weaving into linen textiles. Tow or codilla is a by-product of the processes by which the dressed flax or line is obtained. It is used for making the coarser yarns, twines and fabrics. These two fiber products, line and tow, form the base or raw material of the linen textile industries.

The base of the linseed industries is found in the oil contained in the cotyledons of the embryo plant in the seed of flax. This seed is about one-tenth of an inch in length, somewhat pear-shaped, and glossy, greenish-brown. It is easily and quickly handled in great bulk. In modern practice the oil is expressed by hydraulic presses in a highly-organized milling process, called in the trade "linseed crushing." The residue from the presses, linseed cake, is a valuable by-product used as a stock food.

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[1] The word fiber is used to describe the long hair-like compound of the bast cells of the plant.

Here are two raw materials of first importance, which seemingly should be joint products of the same plants. Yet in fact we find separate production: millions of bushels of flaxseed and millions of pounds of flax fiber or line, accompanied in each case with the rejection of a potential joint product. What is the explanation?

The production of good long line requires first the growing of good flax stems or canes. This is gardening — horticulture rather than agriculture. The greatest care is used, from the thoro preparation of the ground to the hand-pulling of the stalks at harvest time. The soil must be brought to the best garden tilth, and then settled or rolled to make a compact smooth seed bed. The seed is sown broadcast, preferably by hand. Eighty pounds to one hundred and sixty pounds, the larger quantity in the case of the finest line, are sown to the acre, so the plants will grow thickly and without branching. The field is then either hand-raked, dragged or brushed to cover the seeds, after which follows another rolling or treading. Treading with boards attached to the feet, and hand-spading, may still be seen in parts of Europe where the best flax fiber is produced. The careful preparation of the seed bed, thick sowing, and even covering of the seeds, bring up the largest possible number of shoots which develop into long sinewy stems with the branches at or near the top. Besides this, an equable climate causes the continuous and even growth of slender bast cells ensuring a fine tenuous fiber. The flax plant is peculiarly susceptible to injury from weeds, and the fiber grower wants the soil to bear only the flax stalks or canes, and these in perfection.

It is the European custom to begin weeding by hand — the only method possible in such thick growth — when the plants are but a few inches high. As numbers and length, not bulk, are desired, the thinning so often practised in other culture (e. g., *beet culture*) is omitted. Women and children creep slowly and carefully through the fields, examine every inch of ground and pull up every weed. They kneel face to the wind, and work toward it, so that plants which are bent over are straightened by the lifting action of the sun and wind. Two or three such searching weedings leave the ground wholly to the tall, slender flax stems.

There is no such culture in America, North or South, save in experimental plots. The nearest approach to it for any sort of agriculture is the truck farming in the vicinity of our larger cities. Thus the amount of flax fiber grown here and in Canada is of no consequence in the market. Where it is occasionally grown the rough and ready methods are far removed from gardening, and yield generally a kind of line suitable for the coarser yarns and tow products. Prime long line can be produced only by the most thoro and painstaking cultivation. The intention of the European grower of fiber, carefully carried out from the start, is to produce plants with tall, slender stems or canes yielding the greatest possible length and fineness of line.

In sharp contrast is the planting of flax for seed only. The desired end is the greatest number of flowering heads which will bear seeds. Hence a bushy form with many branches must be developed. To secure the greatest yield of seed, the land ought indeed to be better tilled than for the ordinary grain crops, because the flax plant cannot take up raw manures immediately and is quickly weakened by weeds. Virgin soil is best, due to the abundance of natural plant food and the absence of weeds and fungi. Thus in this country, Canada, and Argentina, flaxseed growing has become large-scale frontier farming. All the modern farm machines are employed in preparing the soil and in planting the seed. From fifteen to twenty-five pounds to the acre are sown by a mechanical drill in rows about eight inches apart. The seed is effectually covered and the seed bed made firm and smooth by a plank drag, often drawn tandem with the drill. The result is a thin growth in rows, each plant having room to grow out rather than up — to branch and bear flowering heads. This secures the maximum yield of seed. Many farmers do not weed at all, tho the plants are so spaced by the drill that weeding or cultivating may be done with a disk harrow or other machine cultivator. The ideal is the most efficient seed-bearing structure; no further use of the stems or branches of the plants is contemplated. The great bulk of flaxseed is grown in the newer countries as grain, by extensive agriculture, employing horse or tractor-drawn farm machinery. There is a small secondary yield of seed in northern Europe, notably Russia, as a by-product of flax fiber production. Russia is the only country producing both flax fiber and flaxseed in large quantities. Tho some of this flaxseed is produced as a grain crop on extensive land holdings, with the modern large-scale farming methods and implements, introduced from the United States, Russia remains the chief fiber-producing country of the world.

Contrast now the two cultures at the next stage, the harvesting of the crops. The flax raised for fiber is pulled by hand. The time is determined by the condition of the stalk, which should be green for about one-third its length. In this state the cane possesses its natural oil and gums and is in prime condition for making soft, pliant line. The seed is then in the milk, tho it may be saved by stacking the flax for a time in order that the seed may mature and cure. Many years ago this was a common practice, but the large-scale separate culture of flaxseed has forced the older methods into the distant background. Pulling flax is hard work. The laborer must kneel or stoop, and must grasp a handful of stalks near the roots and draw them from the earth. He then shakes them to remove the dirt, and if he has not taken care to pull stems of about equal lengths, he must sort them before laying them down. This pulling is frequently done by women and children in Europe. In Canada the limited amount of flax grown for fiber is usually pulled by Indians. It is the usual procedure to " ripple " the flax in the field as it is pulled. Rippling is getting rid of the seeds by drawing the stalks through a ripple or coarse comb provided with iron teeth so fashioned and set that the openings between them are wedge-shaped. The workers sit on a bench upon which the ripple is mounted with teeth upstanding. They grasp the stalks by the root end and draw the heads through the ripple. A cover on the ground catches the seeds as they are stripped off. They may be saved in this state and cured for crushing into linseed oil by spreading and drying them under cover. This requires time, space, frequent turning, and much patience; as a consequence they are usually fed to cattle at once. The stalks are then ready for the next process, that of " retting," by which the fiber is made ready for extraction. In certain parts of Europe, a small portion of the world's supply of flaxseed is saved by tying the flax into bundles or sheaves after pulling, and stacking it away until the seed is ripe. The flax is then rippled or top threshed in the fall or winter, the stalks are again bundled, carried over into the next spring, and then retted. But the usual method, bringing quicker returns, is to ripple the flax in the field as it is pulled; the stalks are then bound into sheaves and are taken at once to be retted.

It will be best to leave the flax fiber crop at this stage and turn from the harvesting of fiber stalks to the harvesting of the flaxseed crop. In striking contrast to the long drawn-out production of flax for fiber is the production of the seed of the plant for the crushers making linseed oil. In this case harvesting follows about twelve weeks of the usual passive waiting of the grain grower. During this time the plants have put forth many branches which have borne all the late summer a profusion of ephemeral but beautiful blue flowers. The five-petalled blossoms have matured into bolls containing ten seeds each. In fruiting, the plant elements necessary to reproduction, including the oil, have passed into the seeds; the stems have become lifeless straw. While the bolls are still somewhat green and before they fully ripen and cast their seeds, the well-known harvesting machinery is drawn through the field by horses or tractors, and quickly cuts down the standing grain. The flax is then put through the power threshing machine, the grain is separated or beaten out and is ready for the market.

It is plain that good flax fiber for spinning cannot be made from straw which has passed through the rollers and beaters of the threshing machine. Even if it were not in a tangled and broken state, its fiber is short, coarse, and lifeless — lacking the very essence of good line. It is usually burned in the field where it falls.

Many inventors and experimenters, aroused by this apparent waste of flax straw, have spent fortunes in attempts to find some way of making from the straw the line or even the tow used by spinners. In this country alone many different processes have been thoroly tried and numbers of patents taken out. But so far all have failed to produce anything better than coarse fiber or tow, similar to that which is the residue from the operations for preparing line. Ventures requiring large investment in machinery and equipment have produced for a time limited amounts of the coarser fabrics, toweling and crash. Most of these undertakings have been abandoned, and in some cases the factories have turned to other products. Some tow obtained from seed straw is used for making twines. Upholsterers' tow, refrigerator insulation, straw mats and rugs, fiber board and paper have been made from it with varying success. New and elaborate processes are still being tried; yet the unquestionable fact is that all attempts to produce the better grades of long line from flaxseed straw have failed.

The flaxseed crop, harvested easily and rapidly, may now be sold. But in the other culture the flax fiber stalks or canes have only been gathered, and prepared for the next step in fiber production, that of retting. From the stalks the bast fibers must be got out whole and in spinnable condition. The fibers still possess their natural oil and gum and are bound together, and to the woody stem, by the plant substance known as pectose. This must be broken down by decomposition in order to extract the fibers. From the earliest times, the common method has been to subject the stalks to the action of water either in pools or streams — the surer and quicker way — or by exposure in the fields to the dews and rains, a somewhat longer and less certain means.

This process is called "retting"; in plain language, rotting. The first method is commonly called "water retting"; the second, "dew retting." This latter means is used in Russia, in certain other parts of Europe, and to a very limited extent in Canada, in places where there are heavy dews and plentiful rains. But water retting is still the process by which the best line is produced.

After the seeds have been removed the flax is bound up in sheaves and placed in pools or "lint-holes," made by damming small streams or by digging basins close to the banks of streams and connected with them. The usual lint-hole is about four feet in depth, eight or ten feet in width and of variable length. The sheaves are carefully laid in by hand, not on top of each other and haphazard, but placed in a slanting position, roots down, each sheave overlapping the one beneath, until the area of the pool is well covered. A wicker or straw mat is then placed on the layer, and a few flat stones put on top to make sure the immersion of all the sheaves. Flax is often retted in a running stream. In the famous river Lys in Belgium the flax is sunk in crates just below the surface of the river.

The reasons for pulling the flax instead of cutting it are now clear. In addition to the shortening of the fiber which would occur if the flax were cut, the lower ends would draw the water by capillary attraction and ret first. The retting must progress evenly and uniformly throughout the stalks. The roots naturally close the ends against soil and discoloration as well as against premature retting. The flax is handled with the greatest care to avoid breaking or bruising the stems and to ensure the production of an evenly retted fiber or line of good color, length and strength. To safeguard all these qualities the bundles are examined diligently as decomposition advances. The best of cultivation will produce stems which vary somewhat in bulk and condition. To check the fermentation at just the right time so that the line retains its strength and just enough gum and oil to make it suitable for spinning, requires careful and unusual attention. This operation takes about two weeks.

Much of the finest Belgian flax is double retted in the river Lys. The sheaves are placed in crates which are sunk in the river for a short retting of about a week. The flax is then removed, dried and stored for a time, after which another retting of a few days in the crates finishes this more elaborate method. The double retting with the intermediate curing is said to bring out a finer and brighter line. The river Lys flows through the renowned Courtrai flax district. There is a strong belief amounting to conviction among flax and linen folk that it has retting properties far superior to any other water. This is probably a myth; the true explanation is to be found in the inherited and acquired skill of the flax workers and the better methods of the organized retting concerns in this ancient seat of the linen industry.

In the more common method of retting at one steeping the time varies from ten to fifteen days, depending upon the condition of the flax, the chemical properties of the water, and the atmospheric conditions. During the last few days the flax is frequently uncovered and tested thoroly to avoid over-retting. The retter, by manipulating a stem, can tell at once whether the fibers will come away from the shove or woody portion without injury. If over-retted, the flax is discolored and lacking in strength. If under-retted, the fibers cannot be separated without injury and extracted whole in the "scutching" process which follows. They will be torn and rendered into cheap tow instead of the valuable long line.

The test proving satisfactory, the flax is then lifted by hand from the pool, preferably by men standing in the liquor, so that the bundles may be washed off and handed out free from contact with the sides of the pool or any soil. This would be difficult with forks or any implements, and moreover, the fiber would be bruised and impaired. The liquor in the pool, a solution of decomposed vegetable matter, is a valuable fertilizer and is usually returned to the fields. Stringent laws prohibit the pollution of the streams by turning it into them. An extremely offensive odor and some very unwholesome fumes arise from the masses of putrefaction during the retting and subsequent grassing of the flax. After having drained awhile, the bundles are taken, generally by women and children, to grass lands and spread out for airing and bleaching. This grassing takes about a week during which the flax is frequently turned. The fibers are bleached and cured by the grassing so that they are ready for separation. When the woody part has become brittle, the flax is gathered, bundled and stacked for a few days, either in the fields or under cover, until it is thoroly dry and ready for the next process of "scutching."

Where the climate gives plentiful rains and dews, the extremely unpleasant features of water retting may be partially avoided by dew retting. This method is long and tedious. As it depends on the weather, it requires much labor and attention and double the time necessary for water steeping. The decomposed plants have to be actually taken in the hands in much the same way and for the same reasons as in water retting, but the decaying vegetable matter is spread out in the open and the offensive odors are dissipated. The dew retting having reached the right stage, the flax is usually taken under cover, to properly dry and cure the fiber for scutching.

The line obtained in this way is unevenly retted and dark colored. It is inclined to heat if not properly stored, because of the large amount of oil left in the fiber. For this reason it is pliant and well adapted to spinning after proper preparation.

The next step, completing the extraction of the fiber, is the process of "scutching," which separates the fibers from the woody part of the stalk, and from each other. The plant substances have been decomposed, the stalk with its bast fibers is dried, and the inner wood is very brittle. The simplest way to break up the wood and free the fibers is to grasp a handful of the flax, twist it, and strike the stems gently with the open hand. This is precisely what was done at first. Then a wooden paddle, called a "scutching sword" was used, and much scutching is still done with this simple instrument. Scutching wheels provided with paddles or blades, and run by foot or other power, are now in use. Even with the wheels much hand labor and skill are required, and scutching is far from a machine operation. Still, this is the only process in the production of true long line in which there is any application of machinery, however slight. Before the flax is taken to the scutching wheel it is passed through the fluted rolls of a rolling and breaking machine which presses open the stems and breaks up the wood or shove.

In the usual form the wheel has a number of projecting blades set like those in a revolving fan. The axis is horizontal and the blades revolve in a vertical plane, when propelled by a crank and treadle or a pulley and belt. A slotted board or rest for the flax called the "stock" stands close to the wheel. The scutcher grasps a bunch of the broken flax stalks at the middle and thrusts one end through the stock so that the flax will be stroked by the revolving blades, just hard enough and long enough to remove the wood and short fibers, and thus make the line free and fine. He then changes ends and completes the scutching of the tress. If the flax has been retted properly, and if the scutcher has the required skill of hand and eye, the result is a yield of good line amounting to about two-thirds of the original fiber. The residue, the short and broken fiber which has been struck off with the wood, is tow. This is gathered and saved for making coarse yarns and twines. If the flax has been over-retted and weakened, or if under-retted so that the fibers do not readily separate, scutching will make tow of nearly all of it. A lack of skill and judgment in handing the best of flax to the scutching wheel will reduce it to mere tow. It will be seen that even with the wheel, scutching remains essentially a hand process. Moreover, it is, of necessity, a dirty, dusty, disagreeable operation. In addition to the particles of wood and fiber, there is decomposed vegetable matter and other soil in the air. Where many wheels are gathered together in scutching mills, such as are found in flax districts, the laws require ventilating systems. These are ineffectual, because if there were draft enough to take off all the dirt, much line and tow would be taken away too.

All the operations for growing flax fiber and getting out the dressed flax or line have now been described, and the grower can at last exchange his product in the market. The farmer who raises flax fiber, unlike the producer of flaxseed, grain or other crops, cannot market his product until he has put it through processes requiring much additional labor and time, extending far beyond the ordinary season of harvesting. Contrast the long, tedious, messy methods employed in growing and extracting the fiber of flax, with the simple and ready production of its great rival, cotton. This staple is the pappus of the cotton seed and matures with it. The plants are grown by machine farming methods and the staple is developed by nature to the spinning stage. After cotton is picked it has only to be ginned, a very simple machine process since Whitney's invention; thus it is quickly and easily separated from the seed and made ready for the spinner. The cotton seed, once considered worthless, is now a very valuable joint product.

Some of the attempts to apply machinery and other economies to flax fiber production have attracted the attention of considerable groups of producers, tho none have displaced the older methods. The familiar farm machines have been tried experimentally here and in Canada for preparing the seed bed. The seed for fiber must be thickly sown and is scattered broadcast from the hand in the old countries, tho the hand-driven fan sower is sometimes used. In Canada horse-drawn broadcast seeders are occasionally used. Some growers use an ordinary drill adapted to broadcast seeding by feeding from the hopper through the spouts onto a wide slanting board hung just under them. The seeds deposited at intervals along this spreading board are jarred off by the motion of the machine as it is drawn over the field. The mechanical seeder is a great time saver and will sow ten acres while one acre is sown by hand. But the result of mechanical sowing for fiber is at best a spotted uneven stand of flax, far from the crop obtained by the gardening method, with its thoro and even hand sowing. No machine could be made for weeding or cultivating the thick grass-like stand of fiber flax.

To do away with the slow, back-breaking task of pulling flax many minds have schemed and worked, but so far without producing a successful pulling machine.

Most of the devices are attached to a reaper in place of the usual mowing or reaping mechanism. In one form there is a succession of finger-like projections, close to the ground, similar to those on the cutter bar of an ordinary reaper. As the machine is drawn against the flax, the fingers guide the stalks into the grip of rubber belts, running in opposed pairs on pulleys mounted vertically on an inclined platform. These belts grip and lift the stalks from the soil and pass them over an apron to the ground for curing. Much power is required to propel the weight of this machine with its collection of gears, pulleys, idlers, and belts, taxed with wresting the strong roots of the plants from the soil. The weeds are pulled with the flax and must be separated from it; the dirt must be shaken from the roots, and the stems must be sorted for length. All these tasks are still left for the hands. The ground should be rolled smooth in any case to ensure the production of long even line; but when a pulling machine is to be used, the field must be made as smooth as a putting green. So far, this quest is much like that for a machine cotton picker.

The retting process has probably attracted as many and as brilliant minds as any of the textile processes. Much might be written of the attempts to bridge the slough of retting. A century ago the Lee process promised a revolution in the methods of fiber preparation. The English Government gave special and unusual protection to the Lee patents, which covered elaborate machinery designed to do away with the long and objectionable methods of rippling and scutching as well as retting. The stalks were put through a threshing machine, then through fluted rollers to break apart the wood and the fiber. The fibers were afterwards cleaned and bleached by means partly chemical, partly mechanical. Tho the Irish Linen Board and large producers in Scotland gave much time and money to complete and thoro trials of the scheme it failed to produce strong spinnable line.

Among the earlier modifications of the old time retting methods the invention of Schenck, an American, appears to be the only one used today. He patented in England in 1846 the first indoor or factory retting system. Vats containing heated water maintained at a temperature of about eighty degrees caused the retting to progress faster and without the interruptions incident to natural means. Schenck's process effected a great saving in time but never came into general use because of increased cost. The salient feature of his method, a temperature favorable to the rapid growth of the bacteria of retting, is found in certain present day processes. A later scheme to ret flax in steam was abandoned after many years of experimenting. High temperatures greatly hasten the extraction of fiber but make it brittle and unspinnable. Various chemicals and common substances like milk and oil have been used to quicken or improve the natural method but without success. Recently a French process has attracted the attention of prominent spinners. Briefly, it embodies the essential principles of Schenck's method, with frequent movement of the flax and changing of the water, simulating the retting in the river Lys and other running water. So far, it has not furnished any considerable addition to the supply of the best line.

A fiber factory was built several years ago in Ontario designed to produce line on a large scale by machine processes. A similar plant was established in the heart of the Montana flaxseed district. Electric cranes and machines as well as many novel devices were assembled with great outlay. The flax is de-seeded, not threshed;

the stalks are baled instead of being made into sheaves. Large concrete vats holding many tons of flax are filled with heated water under pressure, and charged with retting bacteria. After two days the flax is said to be thoroly retted. With heat and an exhaust fan the bales are dried in a few hours, and the fibers are then ready for extraction. They are got out by breaking and tumbling the flax in an automatic machine. The product is tow suitable for twines and the coarser fabrics. It has long been held that these short cuts through retting left too much pectose for a complete separation of the fibers, and that quick drying with heat made them harsh, brittle and unsuitable for line. The engineers of this factory retting system claim to have an entirely new type of scutching machine under construction which will produce true long line.

In scutching, as in the other flax operations, great efforts have been made to develop automatic machinery. The type of wheel described before in connection with the scutching process, appears to be the only successful implement for the purpose at the present time. This is not a machine, but simply a power-driven tool, and requires the skilled hand. All straight machine scutching has so far failed, because the cleaning, separating and fining of line is not a simple extractive process. The scutcher must actually see and handle the flax, in order to submit it to the scutching action just enough to remove the boon or shove and to separate the tenuous fibers of the line. A lack of judgment or deftness, carrying the scutching action too far, will reduce the best fiber to mere tow.

Reduction processes in general are not complex, and machinery can be applied without great difficulty to the extraction of an element. The chemical and mechanical means to reduce flax to the elementary cells of the plant constitute a comparatively simple machine process. But the result is a conglomerate of fibrous matter, worthless for spinning and suitable for upholstery or mattress filling only.[1] The extraction of the hair-like fiber of flax, composed of the bast cells of the plant, overlapped and joined together, is a totally different and more delicate operation. To adjust and arrest the processes of retting and scutching appropriately, to separate the fibers, and at the same time to preserve the union of the cells of which they are formed — these are tasks calling for individual attention and for control modified to suit varying conditions. It is the precise measure of the action in both processes which determines the character and proportions of the complementary products — line and tow. While this handicraft requires no high degree of intelligence, it is one whose better craftsmen seem to possess some special aptitude. In fact all the way from planting to weaving the production of fine linen approaches a specialized art. In producing line the successive processes are usually carried through by the peasant farmer who raises the flax. Tho there are a number of retting concerns in the Courtrai district, and scutch mills are frequently found in flax districts, the production of dressed flax remains largely the handiwork of the European peasantry.

There is thus a striking contrast between the production of linen fiber and linseed. The old world product, flax fiber, is gained through intensive cultivation followed by the prolonged application of hand labor under conditions far from attractive. The new world product, flaxseed, is extensively cultivated and quickly harvested with highly developed machinery. In the old countries we find the slow toiling handicraft bringing forth the fine, flax fiber for dainty linens; in the new, the rapid-fire machine production of grain in bulk for the linseed oil industries.

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[1] "Cottonised" flax was introduced before the close of the eighteenth century, when the first power spinning frames turned off cotton successfully but failed to produce yarns from the longer and less elastic flax fiber. The scheme was revived about the middle of the last century and received much encouragement in England and New England during the shortage of cotton caused by the Civil War.

In the production of flaxseed every modern farming implement and machine is used. Tandem plows, harrows, and rollers, often drawn by tractors, prepare the soil. Seeding is done with a mechanical drill followed by a plank drag or a roller. Some growers draw this whole train of machines with a tractor, and thus plow, harrow and pack the soil, drill and cover the seed in one operation. In harvesting, the combined reaper and binder is most used. The binder is sometimes thrown off and the flax allowed to pass over the apron and fall to the ground. This is poor practice, because of the increased cost of raking and stacking the flax and the danger of mold if it is allowed to dry on the ground. Frequently a bunching attachment is put in place of the binder. A wagon then follows, the bunches are taken up and stacked for threshing. The header is common, and when used with a buncher attachment drops the flax as fast as cut into a wagon drawn alongside. When loaded, this wagon takes the flax to the stack and another wagon swings into place. Forty acres a day may be harvested by these means. A combined header and thresher, propelled by a traction engine, has been used in some sections where the bolls can be dried on the straw without loss of seed. Green or damp flax is hard to thresh. The usual method is to stack the flax for curing. It is then put through the power threshing machine, and the flaxseed, separated from the straw, is ready for the market.

The flaxseed crop is the most conspicuous example today of extensive cultivation. Many growers here and in Argentina plant three or four hundred acres. Tho twenty-five bushels to the acre is the possible yield, the average is not far from ten bushels. With intensive cultivation more could be produced. But the crop is an alluring one to the frontier farmer; flaxseed is the only grain which can be grown to full yield the first season on land ploughed and planted in the spring. Many farming lands have been paid for with the flaxseed crop obtained from the first breaking of the soil. Some corn might be grown the first season, tho with a much smaller return. For a good wheat crop the pioneer farmer must wait until the second season, but flaxseed brings an immediate and profitable yield. It has often been planted several years in succession, but such cropping results in failure. A rotation with other crops, varied to suit the soil and climate, is needed to ensure good returns. It has been demonstrated that flax exhausts the soil no more than wheat or the other grain crops. In fact some growers claim that wheat will yield more after flax than flax after wheat. Rotation with other crops is in any case necessary, otherwise the land becomes " flax sick," in the farmers' language. The plants wilt and die if flax is planted too often. Professor H. L. Bolley of the North Dakota Agricultural College says it is not the land that becomes diseased, but the seed. He has shown the presence in the soil of micro-organisms from diseased flax which attack the seed and cause " flax wilt." The prime cause (fusarium lini Bolley), has been named after its discoverer. These fungi are found in soil possessing all the chemical elements of plant life. They are transmitted in the seeds, straw and chaff of diseased flax. The preventive measures are clean culture; then plump healthy seeds only should be selected and sprayed with formaldehyde. The careful cultivation and selection of seeds, together with pulling up and decomposing the plants at some distance from the tillage, have prevented the spread of plant disease in the European fiber districts. Flax wilt has been the chief cause of the striking migrations of flaxseed — its wanderings from one new region to another.

The bulk of the flaxseed crop has been produced by the frontier farmer. He had the advantage of a better yield on newly broken land, and could produce the crop successfully for a considerable period, tho in time the land would become "flax sick." As the crop has been handled, after a few failures the standard grain crops tend to displace flaxseed and drive it on to another frontier. Now that science has found the cause of its wanderings, flaxseed may settle down so that a thoroly scientific culture may be developed. There is nothing in the economic conditions which would prevent continuing production in the same regions, as in the case of wheat, corn, and the standard crops. Like them it will always be produced most effectively on a large scale on the great outlying tracts.

A brief sketch of its wanderings in the United States will prove interesting, as it is this phase of extensive flaxseed culture which accentuates the contrast with the staid and intensive culture of flax fiber.[1] In colonial times flax fiber was an important product on the Atlantic Coast, and the seed for oil was a by-product. In the early days of the last century the expansion of the country and of building, with newly-discovered uses for linseed oil, had brought about a great increase in the demand for flaxseed. On the other hand, the rise of cotton and the decline of linen had caused such a diminution in supply that it became necessary to seek new sources. It is impossible to fix the exact date, but early in the nineteenth century a new culture was tried on the new lands of western Pennsylvania and New York. Flax was planted for the seed alone and proved a successful crop for a time. From the records of old linseed crushing mills, and the data of our Department of Agriculture, the course of the flaxseed crop can be traced through the West as the land was opened to the settlers. From Pennsylvania the crop spread into Ohio, then into Indiana and Illinois. Cincinnati was the center and the market for flaxseed in 1850, the first year giving any accurate records. The crop then declined in the older states, Pennsylvania and New York, and advanced into Missouri; a little later, into Iowa and Wisconsin. In 1870 Chicago was the center. In the next ten years flaxseed spread into Kansas, Nebraska, and Minnesota, and Minneapolis became the market. In 1890 it was well advanced in the Dakotas, and that year saw the retirement of almost all the states producing flaxseed east of the Mississippi. The immense tracts of the Dakotas and Minnesota sufficed for a period, but about 1900 the crop moved into Montana, where it is now held up in its march by the mountains. The great bulk of flaxseed has long been produced in the northwestern states, tho there has been a smaller but similar movement to the Southwest, and some seed is produced in the far west. Duluth, at the head of the Great Lakes, is now the chief market. The lands of the prairie provinces of Canada are producing much flaxseed and Winnipeg is also an important market. Practically all the new land has now been cropped and flaxseed production seems to be on the decline in the states. Unless scientific methods are adopted our flaxseed production will gradually diminish. In the meantime, a newer country, Argentina, has entered her fields and has outstripped us. So far as can be judged from incomplete crop reports, there is in that country a tendency similar to the movement in our own. As long as there are new lands in the world, flaxseed may keep on wandering, tho the scientific development of the culture promises a great change and the possible standardization of the crop.

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[1] The movement of the flaxseed crop across our country, with the pioneer farmer, is clearly shown in Table No. I in the appendix.

No fiber culture of any consequence has ever been developed in this country, in spite of colonial and state bounties in the early days, many private promotions since, and continued aid from the federal government. The Department of Agriculture has maintained for years a bureau for plant fiber investigation. A chief object has been the encouragement of flax fiber culture, and much time, energy (and flaxseed also, in the form of printing ink), have been expended in vain attempts to foster even an infant linen industry. Tho many immigrants have come from the flax districts of Europe, they cannot be induced to continue in flax fiber production after settling here and finding more attractive and profitable employment open to them. Projects to develop the industry are still on foot. Probably the most recent is the attempt of the state of Oregon to introduce fiber production in the Willamette Valley. The Dominion of Canada has given government aid to the establishment of fiber culture. The early settlers in the Lower Provinces of Canada, like those in the New England colonies, produced flax for home consumption. The industry declined there as here. Later attempts to restore it, undertaken in Ontario with substantial backing and continued with energy down to the present time, have resulted in the sporadic production of small quantities of inferior line.

It is apparent that the countries having new lands, and a supply of labor accustomed to handle farming machinery, have an advantage in flaxseed farming. It would not be impossible to produce flax fiber in these countries, but their labor would be applied less effectively to the fiber than to the grain. Small farming or gardening, on the other hand, is still the preferred pursuit of a large part of the population of Europe. On the Continent and in Ireland are an immense number of peasant proprietors or small tenants. Here is a great group of producers having inclination, aptitude and the social conditions for such undertakings as the growing of flax fiber. The fiber is usually grown, retted and scutched on the farmer's premises and by his family, with a ready supply of supplementary labor in the neighborhood. Money wages in France and Belgium for such work are 2 fr. 50 or 3 fr. per day. In Russia and Ireland money wages are less. An old Irishman once said when discussing the extremely disagreeable and unhealthy features of retting: " there are people all over my country who are willing to do anything for a livelihood." A livelihood, the means of existence, the " subsistence " of the older economists — this sort of life has played no part in the agriculture of the United States.

No doubt the European producer of fiber has some advantage in climate. The cool, equable temperature, and the moist, cloudy atmosphere of Ireland and the lowlands of northern Europe, are favorable to the growing of fiber. The sudden changes of our climate, from wet to dry and from hot to cold, check the growth of the plant stems and thicken the bast cells. Even where there are no droughts, the sunny atmosphere, the extreme heat of our summers, and the high winds, are unfavorable to the growing of prime flax fiber. True, there are localities in our country which come nearer the required conditions, such as Michigan and Wisconsin on the lakes, and the coast districts of Oregon and Washington. In Canada two regions also are more suitable than other parts of the Dominion — the lowlands of western Ontario and the shore of British Columbia. Even Alaska has grown experimentally some very good fiber. But what matter the relative natural advantages? Apart from these advantages, the older countries because of labor standards, agricultural surroundings and acquired skill, will be able to apply their labor more effectively to fiber production. The newer countries with large tracts of land, efficient farm machines and skilled operators, will enjoy a substantial advantage in the production of flaxseed. If a scientific culture disposes of the wilt and develops the flaxseed crop, it will possibly settle down for long periods; in any case, it will always be conducted on the outlying lands on a large scale with machinery.

The two products, flax fiber and flaxseed, cannot be produced in the better grades from a single cultivation by any methods now known, because of the differences in the development of the plants which produce fine long line, and those yielding the rich, full seed. And even if these differences be modified or overcome, a vital element is still lacking. The oil — fundamental to both products — cannot be possessed in the required measure by both the seed and the fiber of the same plant at the same time. If the flax is allowed to grow until the seeds are fully formed and ripened, the stems are lifeless and brittle; the fiber has lost the oil and gum required for making prime long line. If the flax is pulled at the proper stage for making line, the seeds can be cured only by protracted handling and will not contain enough oil to return the expenses of production save in those countries having a supply of very cheap labor. One end defeats the other. To paraphrase an old adage — you cannot spin your flax and crush it too.

Until machinery can be effectively applied to the several operations in growing and extracting flax fiber — an improbable contingency — the characteristic direction of labor in the two branches of flax culture, and the sources of supply for fiber and seed, will remain unchanged. The differences between the two serve as an example of the way in which the principle of comparative advantage acts in production. Flax fiber or flaxseed *can* be produced in almost every country; but each *will* be produced, if let alone by governments, in those countries able to apply their labor most effectively to each. The production of either will be determined by comparative advantage; by the relative measure of the return when labor is applied to it. Flaxseed is produced most effectively under one set of conditions, and flax fiber under another. A climate suitable for either culture is found in many parts, and soil which will bear the flax plant is found all over the world. But soil and climate on the one hand, social conditions and skill of the required degree on the other, concur for fiber culture in certain regions only. These have a comparative advantage in fiber production. Labor applied to fiber is in them more effective than when applied to seed. Flaxseed can be produced in all of the fiber countries and is produced in some. Nevertheless, the countries with new and extensive lands have a clear advantage in flaxseed production; in addition, efficient farm machines and the mechanical skill to operate them combine to make their labor far more productive in flaxseed farming than in fiber culture.

Flax fiber can indeed be produced in the United States and the other machine farming countries, if labor be forced into this slow, plodding employment. But workers with mechanical inclination, the spirit of enterprise, and plenty of land, will not take up this handicraft — such it is and is likely to remain — while they can find congenial and profitable employment in flaxseed farming under agricultural methods fitted to American standards. America has abundant land, and is trained and equipped for branches of production in which machinery can be used with greatest effect. Tho much may be accomplished in the future through invention and scientific development in the two fields of flax, the production of fiber and seed, if left free, will be regulated and determined by the proportional effectiveness of labor in the new countries and the old.

APPENDIX

TABLE I

PRODUCTION OF FLAXSEED BY STATES, CENSUS YEARS 1850–1910 AND 1915

Bushels (000 omitted)[1]

STATES	1850	1860	1870	1880	1890	1900	1910	1915
Penn.....	42	24	16	5	4			
N. Y.....	58	57	93	72	21	1		
Ohio.....	189	242	632	593	146	30	5	
Ind.	37	119	402	1419	18	1		
Ill.	11	9	280	1812	35	4	1	
Wis......	1	4	112	547	68	141	119	94
Iowa.....	2	6	89	1511	2282	1413	141	162
Neb......				78	1401	55	21	77
Minn.....			19	99	2722	5895	3277	3150
S. Dak. ..				27	1801	2452	4760	1650
N. Dak...					164	7767	10246	6534
Mont.....						1	447	1890

[1] Compiled by the writer from figures furnished by the Department of Agriculture. The step line indicates the decline of flaxseed from the peak of production in the several states, and the movement of the crop across the country with the frontier farmer. As evidence of the positive character of this movement, about 90 per cent of the total production in these states up to the census of 1910 will be found below the line. The crop of the southwestern states, not here shown, is small, and shows a similar tendency.

TABLE II

Flaxseed Acreage and Production in United States, 1849–1915[1]

(000 omitted)

Year	Acres	Bushels
1849............	..	562
1859............	..	567
1869............	..	1,730
1879............	..	7,170
1889............	1,319	10,250
1899............	2,111	19,979
1902............	3,740	29,285
1903............	3,233	27,301
1904............	2,264	23,401
1905............	2,535	28,478
1906............	2,506	25,576
1907............	2,864	25,851
1908............	2,679	25,805
1909............	2,742	25,856
1910............	2,467	12,718
1911............	2,757	19,370
1912............	2,851	28,073
1913............	2,291	17,853
1914............	1,645	13,749
1915............	1,387	14,030
1916............	1,605	15,459

[1] Statistics of the Department of Agriculture.

TABLE III

WORLD'S PRODUCTION OF FIBER AND SEED, 1911–13[1]

Some producing countries omitted because not reported
(000 omitted)

Country	Fiber (lbs.)			Seed (bu.)		
	1911	1912	1913	1911	1912	1913
United States	...	...	...	19,370	28,073	17,853
Mexico	...	...	...	150	150	150
Canada	...	...	...	10,075	26,130	17,539
Argentina, S. A.	...	...	...	23,424	22,534	43,305
Uruguay, S. A.	...	...	...	660	879	1,302
Austria-Hungary	68,026	80,729	71,976	890	874	801
Belgium	52,000	64,000	39,437	515	514	387
Bulgaria	878	308	...	12	6	8
France	45,003	46,074	48,437	496	576	740
Italy	6,078	5,511	5,732	341	343	405
Netherlands	20,929	21,217	16,606	579	428	326
Roumania	4,530	8,953	4,759	607	772	569
Russia (European)	785,136	1,172,059	1,703,209	20,544	22,177	24,456
Russia (Asiatic)	...	...	...	1,099	1,230	1,927
Serbia	2,091	2,095	...	...	...	...
Sweden	1,500	...	418	17	...	...
Ireland	25,179	29,021	28,341	...	...	...
British India	...	...	...	22,544	25,592	21,544
Algeria	...	...	...	16	13	15
Total	1,011,350	1,429,967	1,918,915	101,339	130,291	131,327

TABLE IV

WORLD'S PRODUCTION OF FIBER AND SEED, 1896–1913[1]

Year	Fiber (lbs.)	Seed (bu.)
1896	1,714,205	82,684
1901	1,050,260	72,314
1906	1,871,723	88,165
1911	1,011,350	101,339
1913	1,918,915	131,327

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[1] Statistics of the Department of Agriculture. These are the latest complete figures, because all the important fiber-producing countries are involved in the war. The fighting on the western front has laid waste the best linen district in the world.

REVIEWS

KEMMERER'S MODERN CURRENCY REFORMS[1]

THE scope of Professor Kemmerer's *Modern Currency Reforms* is best indicated by its sub-title. A different designation might probably have been more apt, since many of the currency changes described are not particularly modern, and the volume does not include all modern currency reforms. It is a review of certain currency changes undertaken for the most part in countries of minor importance, and leading in most cases to the establishment of the so-called gold exchange standard. Viewed as a discussion of the introduction of the gold exchange standard the book is inclusive, covering the field thoroly. Inasmuch as there is no direct relationship between the several currency experiments which are considered, the volume is almost of necessity a collection of monographs, largely independent of one another. Indeed, there is some internal evidence that the several sections were prepared at different times and under different conditions. The author notes that the material has been in process of collection for a period covering thirteen years.

The plan of the book is primarily historical, and in each of the monographs which compose it the bulk of the space is given to a detailed and very careful account of the successive steps by which given currency problems have been developed and have then been gradually disposed of. This gives the volume its principal value. It impresses the reader as a very complete survey of material, of which large parts are not easily accessible, while other parts are to be found only in so fragmentary and disjointed a form that careful and skillful work is necessary to draw them together and to create a logical and consecutive analysis of the situations to which the data refer. A disappointing feature is found in the fact that there is comparatively little discussion of the principles at issue, and that the author's views and opinions are expressed only incidentally and sporadically. In a scientific inquiry it is of course well to be cautious in the expression of mere opinion; yet one of the principal services to be rendered by a work on so technical a subject is that of educating and informing the reader, and of assisting him to reach sound conclusions. In fact there are many cases in which the man of affairs, unfamiliar with Oriental or Latin-American conditions, will probably find it hard to detect the bearing of the material in this volume upon his own commercial and financial interests, even tho they may be closely affected by the conditions set forth.

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[1] Modern Currency Reforms: A history and description of recent currency reforms in India, Porto Rico, Philippine Islands, Straits Settlements and Mexico, by Edwin Walter Kemmerer, Ph.D., New York City. The Macmillan Company, New York, 564 pages + xxi.

The tenor and conclusions of the book favor the so-called gold exchange standard, that is, a currency mechanism or arrangement under which a silver circulation is maintained in the hands of the people for actual use, with a provision for satisfactory conversion into the gold currency of some other nation. Thus, in the case of the Philippine Islands, the gold exchange standard rests in practice upon the use of silver or silver certificates by the population, with arrangements for converting these media of exchange into American money either on the spot or at a designated point in the United States. The gold exchange standard, as thus conceived, presents itself as an intermediate condition between the gold standard as such and bimetallism. It avoids the necessity of obtaining or supplying a quantity of gold for actual use, or even for the reserves of banks; it permits the circulation of the less expensive silver, or the still cheaper paper representative of silver; and it avoids the evils attendant upon changes in the ratio of silver to gold by undertaking to maintain a constant and steady basis of convertibility at which silver shall be exchanged for gold or gold equivalents, or *vice versa*. Such a standard of value and exchange can be employed only for and by a dependent country — one whose financial system is practically subordinate to or controlled by that of another nation. Professor Kemmerer at times seems to regard the gold exchange standard as an independent, self-supporting system. But the whole tenor of his work is to show that the reverse is the case, and that the success of the gold exchange system is in direct ratio to the degree in which the country adopting it is dependent upon another. The author is right in feeling, as he evidently does, that the story of the experience of the several countries has been sufficient to carry a very distinct lesson in regard to the use of this currency expedient, and that a detailed review of what has been done furnishes a valuable lesson as to the prospects of the system for the future and the extent of its applicability.

The best and most complete of the monographs included in the volume is that relating to the Philippine currency reform. Upon the arrival of the American forces in the Philippine Islands, they found a very confused and uncertain currency. The Mexican peso, and a slightly less valuable coin, known as the Spanish-Filipino peso, were in circulation. Various other media of exchange were in use, including bank notes issued by a local institution which enjoyed the exclusive privilege of note issue. All these different kinds of money ordinarily circulated at par with each other and at a value well above the bullion value of the Mexican peso. Serious difficulties were encountered after the installation of the military government, due to the obstacles to the maintenance of satisfactory relations between gold and silver. Disturbance of prices with corresponding suffering to the rank and file of the public, led to a recognition of the necessity for some improvement. The consequence was the bringing forward of various rival proposals: one the establishment of a local gold currency, a second the transplanting of the American currency system to the Philippines, and a third the adoption of the so-called gold exchange standard. The last named was eventually resorted to, and in the act of March 2, 1903, provision was made for the establishment of a gold standard with a theoretical gold peso exactly equal to fifty cents in

United States currency. A silver peso, worth a little less than thirty-eight cents, was provided for, with suitable minor coins, and the issuance of silver certificates was also permitted. Provision was made for a gold reserve, and the Government undertook to maintain the equivalence of Philippine currency and American money under conditions specified in an act passed by the Insular Legislature on October 10, 1903, at ratios ranging from ¾ of 1 per cent for demand drafts, to 1⅛ per cent for cable transfers. Before the system could become fully operative, more or less effort was required to drive out the old currency and secure the introduction of the new money. Eventually the new system was more or less successfully introduced, and after a re-coinage of the new silver had been effected, necessitated by miscalculations in determining the proper content of the original issue, conditions settled to a normal basis. The author reviews at some length the recent uses made of the gold standard reserve fund, a fund maintained by the Government for the purpose of converting local currency into gold (American money), and very properly criticizes the practice of investing it in various long-term enterprises, or depositing it in banks where it passes directly into local use. The only palliation of this practice is found in the fact that at one time the gold standard reserve fund had become abnormally and unnecessarily large, reaching 43 per cent of liabilities. Due to the practices just referred to, however, it has in recent years fallen below 20 per cent. The author thinks that it should be maintained at 25 or 30 per cent, with the funds representing it in a strictly available form. In this he is probably correct, if reference be had merely to the situation existing prior to 1916. The organization of the Philippine National Bank has materially altered the state of things in the Islands and the form in which the currency question presents itself. This volume, however, was prepared before the organization of the new bank.

Very much the same method of treatment as is used in reviewing the history of the Philippine currency reform is applied in dealing with currency changes in India, the Straits

Settlements, and elsewhere. The Indian currency reform is more familiar to monetary students than most of the others dealt with by Professor Kemmerer, and need not be considered in detail. It is enough to say that the Indian system is similar in general to that subsequently adopted in the Philippine Islands, the plan adopted in India being indeed the original from which many copies were made. Professor Kemmerer believes that the test to which the Indian currency has been subjected during the past two or three years has shown the world that " few if any currency systems have more effectively met the shock of world catastrophe." Yet the detailed history of the various currency expedients adopted in India shows that there, as elsewhere, the gold exchange standard is essentially a patchwork expedient, unstable, subject to disturbance by shifts and changes in foreign trade, and requiring constant tinkering in order to function effectively.

In the Straits Settlements another special phase of the gold exchange standard is presented. The Philippines have a fairly normal and constant level of foreign trade with corresponding stability in rates of exchange. In the Straits Settlements variations in exchange are the rule rather than the exception, with the result that the system requires manipulation from time to time and correspondingly more careful management. The Mexican currency system and the transfer of the country to a strict gold standard in 1904–06 is interesting, but is today of historical interest only, in consequence of the disturbances which have brought about a complete breakdown of this carefully constructed gold currency system. Comparatively little instruction is to be had from the experience of Porto Rico, which has its own peculiar features, differentiating it from that of Mexico or the Philippines.

While the critical study of the currency and monetary history of the countries under review furnishes much that is incidentally interesting and instructive, the reader will conclude that the experience set forth in each case lacks breadth, or is vitiated by peculiar and exceptional conditions, to such an extent as to deprive it of world interest, taken by itself;

and he will probably conclude that the main significance of the volume is to be found in its bearing upon the general question of the gold exchange standard as a type of monetary system which may be used more extensively in the future. If he be given to speculation regarding the future, he will, for example, wonder whether some of the European countries who have lost their gold during the present war, and may desire to provide themselves with a cheap substitute for actual use, while nevertheless retaining such stability and permanence as the gold standard may afford, may not seek to make use of something resembling that standard in their own territories. The volume hence possesses a timely interest, and the question arises what are the lessons to be drawn with reference to the working of the various monetary experiments described in it. On this point the conclusion almost certainly would be, as remarked earlier, that the gold exchange system is available only for dependent countries. In short, it is not a monetary system, but a connecting link between an isolated market and the broader market to which it looks for support. It is not available, for example, under conditions where the country employing it is likely to exert a material influence upon conditions in the markets of the nations whose currency unit it has borrowed. The constant adjustment and tinkering with currency legislation and banking and exchange methods, necessary in order to make the system workable under all circumstances would put it practically out of the question except under conditions of almost absolute political control.

Nevertheless, as far as it goes, the gold exchange standard experience is interesting, and it has doubtless been worth while to set it down in this careful and systematic manner. True, much of what has been done is now out of date. Even of very recent years revolutionary conditions and economic developments have altered other portions of the work. Experience has shown that it is difficult for any nation to get the benefits of the gold standard without paying for them. Yet it is possible that in the years after the European war, monetary and banking systems throughout the world will be subjected to extensive revision. Under these circumstances currency legislators and administrators will need the aid of all the exact information they can get, and will have to shape their conduct upon a broad basis of fact and conclusion. These considerations afford full justification for the publication of a volume like that of Professor Kemmerer. It will prove not least useful as a reference handbook.

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BARNETT AND McCABE'S MEDIATION, INVESTIGATION AND ARBITRATION; MOTE'S INDUSTRIAL ARBITRATION[1]

THE failure of Congress to provide funds for the publication of the reports made to the Commission on Industrial Relations by the investigators employed to conduct special inquiries in certain fields has, fortunately, led some of the investigators to provide for the independent publication of the fruits of their researches. Among them is this small book by Professors Barnett and McCabe.

Altho the title does not indicate it, the work deals only with mediation, investigation and arbitration in the United States. Furthermore, it does not pretend to cover the entire field; it does not deal at all with private efforts to settle industrial disputes, such as the protocols in the sewing trades of New York City; and in dealing with public efforts in this field, the discussion is limited to a very brief account of the work accomplished in recent years in Massachusetts, New York and Ohio, and to a statement of changes which, in the opinion of the authors, should be made in the present methods of handling industrial disputes both by the state and federal governments.

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[1] Mediation, Investigation and Arbitration in Industrial Disputes. By George E. Barnett and David A. McCabe. New York, D. Appleton and Company, 1916, pp. 209.

Industrial Arbitration: A World-Wide Survey of Natural and Political Agencies for Social Justice and Industrial Peace. By Carl H. Mote. Indianapolis, The Bobbs-Merrill Company, 1916, pp. 321 + xlv.

From a qualitative standpoint the discussion is in keeping with the high reputations of the authors in the field of labor problems. The reviewer has personal knowledge of the fact that the field investigation by Dr. McCabe was carefully done, and the descriptive portion of the work furnishes as accurate an account of the methods by which mediators and arbitration boards in the states named have attempted to perform their work as it is possible to give in terms of a general description. The truth of the matter is that since the success of mediation depends primarily upon the personality of the mediators and the willingness of the disputants to accept mediation, no two cases are alike in the problems which they present and the combination of qualities which they call for. The most successful mediator is he who can most readily adapt his methods to the ever-changing conditions with which he is called upon to deal. For this reason any description of mediation is bound to be vague, or else resolves itself into a description of the methods by which mediation has succeeded in particular cases. No successful mediator could draw up a formula for mediation which would be of much use to another man working in the same field, and it is more than likely that the mediator himself would be obliged to reject his prescription in the very next case with which he was confronted.

Of the three methods for dealing with industrial disputes presented by the authors, mediation, investigation and voluntary arbitration, it appears (p. 4) that the best results have been secured through mediation. In all the three states named the official mediators have succeeded in a considerable number, tho always a minority, of the cases in which they have intervened. If their success be measured by the proportion of settlements which they have secured to the total number of industrial disputes which have occurred during the period when the machinery for mediation was in existence, it is of course far less notable. This usually is not the fault of the mediators. It simply means that they either did not know of the existence of the disputes, at least in time to make their intervention of any value, or else that the disputants were unwilling to permit of any interference by outside parties. It goes to show, however, that the prospect of preventing most strikes by the voluntary acceptance of the services of state officials as mediators is not one on which the public can, in the immediate future, gaze with any feeling of confidence. In view of the fact that any strike of considerable magnitude means a great loss to employers and employees, it is a sufficient excuse for the maintenance of boards of mediation by the state to point out that even tho the mediators succeed in preventing or settling only a few of the important industrial disputes, the savings thus made compensate many times over for the expenses incurred in the establishment and maintenance of the boards. On the other hand, the relatively small number of industrial disputes which are settled by the efforts of state mediators shows clearly that the public ought not to be satisfied with the establishment of this mode of securing industrial peace.

There are six ways, according to Professors Barnett and McCabe, in which mediators may be able to render service to the parties to an industrial dispute.

1. They may bring to the attention of both disputants the fact " that there are terms which both sides are willing to accept as a settlement " (p. 16). The method usually followed in Massachusetts is to bring the parties together in joint conference after they have learned that there does exist a common basis of agreement (p. 28).

2. The mediator may act as the " confidential intermediary " between the parties, effecting a settlement without bringing the parties together. This is the method which in recent years has been found most effective in Ohio. It " seems most likely to be successful in disputes involving recently organized workers " (p. 26).

3. In some cases " the mediators have been able to secure a settlement by a separate agreement with each party when

one party would not make an agreement with the other." (p. 30). The employers may agree to introduce certain improvements and the employees, on hearing of this, decide to return to work.

4. The mediators may themselves recommend terms to both parties and may in this way get certain concessions which would not otherwise have been granted (p. 35).

5. Sometimes the mediator is able to suggest a settlement which satisfies both parties and which they had not been able to think of themselves (p. 38).

6. The mediator may find a solution which is " not merely a compromise," but one " which safeguards the workman from industrial tyranny or preserves his vested interest in the trade and at the same time leaves the employer free to safeguard himself against incompetent workers and to improve in legitimate ways the processes of production " (pp. 42–3).

The authors admit that such settlements are not oftentimes the fruit of official mediation. Failure to secure them, with willingness to suggest a compromise which fails to result in social justice is, in the mind of the reviewer, the chief defect of mediation. Arbitration in this respect offers greater possibilities than mediation.

Where mediation has been most successful the mediators have been selected without reference to their politics, and their general reputation for fairness has enabled them to command in advance the confidence of both employers and employees. It will be an advantage to the chief mediator if he has not previously been closely identified with trade unions or with the employing interests, tho such connections do not always prove fatal to his work. For the assistant mediators it will be an advantage to have been affiliated with trade unions and employers' associations, for the chief mediator can then make use of them to appeal to their respective interests with a better prospect of securing the confidence of both sides than if he were lacking in such connections.

Public investigation and recommendation as a method of settling labor disputes receives relatively little attention from the authors. It has been used but little in Massachusetts where, however, the act of 1914 requires the State Board of Conciliation and Arbitration to make and publish a report which locates the responsibility for failure to arrive at a settlement of the dispute. Still less use has been made of investigation in New York (p. 79) and none whatever in Ohio. The success of compulsory investigation in Canada in connection with the public service and mining industries shows that this method might well be used more largely in the United States, even if the disputants were not required to refrain from strikes or lockouts pending investigation (p. 86).

Voluntary arbitration of an industrial dispute by a state board of arbitration has rarely been used in New York and Ohio in recent years. In Massachusetts more use has been made of this method; mainly because the employers and employees in the boot and shoe industry, under their scheme of collective bargaining, leave the disputed points which arise in connection with the interpretation of their agreement to be settled by the State Board. Messrs. Barnett and McCabe think that this experience warrants the conclusion that a board of the Massachusetts type would be of value in other industrial states. This conclusion may be doubted, however, since other industries in Massachusetts have not, to any extent, followed the precedent set by the boot and shoe industry of referring disputed points in their trade agreements to the State Board (p. 93).

The plan proposed by the authors for a State Board of Mediation, Investigation and Arbitration is made up of the best points developed by the experience of the three states named. As the title implies, it makes use of all three of the methods and provides separate boards for the carrying on of each function. The plan would be much more expensive than that now in use in any American commonwealth. It might be worth the extra expense in the leading industrial states: that would depend largely on the confidence which the men appointed on these boards inspired in the minds of the employers and employees. In view of the fact that compulsion of any sort is lacking in the scheme, except that the boards of mediation and investigation are given the powers necessary to secure the information required for their reports and recommendations, and in view of the further fact that collective bargaining is not yet the rule in most industries, it seems doubtful to the reviewer whether this more elaborate and expensive machinery would be much more successful than the systems now in use.

Professors Barnett and McCabe give practically no space to a discussion of the work of mediation and arbitration carried on by the federal government under the Newlands Act and the act of March 4, 1913, providing for appointment of mediators by the Secretary of Labor. They do submit a plan for a National System of Mediation, Investigation and Arbitration, which, if adopted, would take the place of both the above-mentioned acts. It provides for a Mediation Commission, and for an Industrial Council composed of leading organizations of employers and of employees to act as an advisory body to the President, to Congress and to the Mediation Commission. The Council is also to prepare panels, or lists of persons, from whom are to be selected the persons who are to serve on boards of arbitration and on boards of mediation and investigation. This latter part of the plan is clearly borrowed from the act of 1911 in Great Britain, creating an industrial council, tho the authors nowhere refer to this precedent.

It has been pointed out by other writers (especially by Professor Commons in *The Survey* of March 31, 1917) that the chief defect of the Newlands Act is that it provides no separate board for the interpretation of the awards of the arbitration board. The importance of clearly distinguishing between the making of an agreement or award and its interpretation was emphasized years ago by Sidney and Beatrice Webb in their account of collective bargaining in the English cotton industry, and it has also been developed in connection with the interstate agreements in the coal-mining industry in the Middle West. The plan outlined by Messrs. Barnett and McCabe does not, however, provide any separate machinery for the interpretation of awards. One's judgment on the adequacy of either of the plans proposed by the authors must necessarily rest largely on his belief concerning the success of any plan of purely voluntary arbitration.

Mr. Mote's book on Industrial Arbitration is more comprehensive in its scope than the one just considered. It reviews the plans attempted in many of the American commonwealths as well as those employed by the federal government. It also describes briefly the methods employed by the European, Canadian, and Australasian governments and gives a short account of the most important efforts to prevent industrial dislocations by means of trade agreements, protocols and private arbitration boards in this country.

As far as the descriptive part of the book is concerned, little can be said in commendation of the work. This applies to all except the opening and closing chapters. The accounts of the various experiments are too brief to be of any value. They seldom include the most recent legislation and therefore fail to furnish the reader with a reliable statement of the present status of industrial arbitration in the various countries. There is also lacking an adequate discussion of the results of the legislative experiments, and one finds no explanation of the causes of failure where failure is claimed.

In spite of these defects, the opening and concluding chapters do display considerable insight into the problem presented by the phenomena of strikes and lockouts. The author sees that all attempts at mediation and arbitration are to be regarded, even when most successful, as mere palliatives, and he understands that industrial peace will come only when it is coupled with social justice (p. 325). There can be no industrial peace while wages and working conditions are unsatisfactory. Everything which makes the wage system more bearable, as Mr. Mote points out, adds to the chance of industrial peace. " Child labor laws, limitation of night work, shorter hours, sanitary and health legislation, monetary compensation for industrial accidents, minimum wage laws in the sweated industries and collective bargaining, roughly speaking, have marked the stages of progress " (pp. 323–24). The most effective method of preventing strikes is to create conditions under which they are not likely to occur (p. 326).

One thing seems clear from a perusal of these books as well as from a study of other material dealing with the progress of mediation and arbitration. The public is, year by year, showing greater interest in industrial conflicts and apparently is becoming less patient with their continuance. It cannot be said that, in this country, there is any pronounced sentiment in favor of compulsory arbitration. It is to be noted, however, that practically every revision of the laws providing for mediation or arbitration enlarges the power of the government to bring pressure upon the parties to come to a settlement of their disputes. The United States Supreme Court, in the Adamson case, went out of its way to make clear the fact that Congress possesses the powers necessary to provide for compulsory arbitration in interstate railway disputes. It probably only requires a railway strike of some magnitude to convince the country that it is desirable that Congress use these powers. When this comes about, however, it is likely that it will be accompanied by measures designed to raise the standards of living and otherwise improve the working condition of the employees, — not merely the members of the railway brotherhoods, but all those engaged in the railway service. These gains will more than compensate the workers for restrictions on their freedom to carry on industrial warfare. Such, at least, has been the history of compulsory arbitration in Australasia, and such it is likely to be in any country where the political power rests in the hands of the masses.

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THE NATURE OF INTEREST AND THE CAUSES OF ITS FLUCTUATIONS

SUMMARY

I. Capital defined as wealth produced by labor and destined to satisfy wants in the future, 547. — The possibility of interest due to the fact that capital saves labor, 550. — Concrete illustration of the saving, 551. — II. Illustration of the circumstances which may affect the rate of interest under hypothetical conditions, the main conclusions of the present essay being suggested. — Capital quantitatively expressed in terms of labor multiplied by the time intervening between labor and enjoyment, 553. — III. Circumstances affecting the demand for capital: (*a*) The opening of new lands, 557. — (*b*) Inventions, 560. — Under certain conditions the ultimate effect of these circumstances is opposite to their immediate effect, 561. — (*c*) Variations in the aggregate consumption of society, 563. — Effect of such variations on the supply of capital, 564. — Supply of capital also affected by the quantity of labor expended, 567; which for a given population depends on the amount of leisure enjoyed and on the efficiency of labor, 568. — Conclusion on ultimate causes permanently affecting the rate of interest. — Why capital has always been able to earn interest, 569.

I

Is waiting a separate factor of production ? It is so regarded by Professor Cassel,[1] and the same view seems to be implied in many other theories of interest. To the present writer, however, it seems doubtful whether it should be regarded as a conscious process at all. No doubt with some people it is; but others decide on their expenditure first, and then save the balance of their income. To regard waiting in all cases as a deliberate act seems to assume that everybody decides first how much he must save, and then spends what is left. At any rate, it seems possible to account for interest and its fluctuations without assuming a peculiar kind of human exertion on the action of which all saving is dependent.[1]

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[1] The Nature and Necessity of Interest, chap. II, § 4.

Economic literature is amazingly rich in definitions of capital, and the first task of a writer on interest must be to decide which he will adopt. I have chosen that which is expressed by Professor J. Shield Nicholson as follows: "Capital is wealth set aside for the satisfaction — directly or indirectly — of future needs," [2] — exclusive, it is necessary to add, of the gifts of nature. This definition does not class goods destined for immediate consumption as capital, altho it does those which are in the hands of their ultimate consumers if of a durable character or in any sense destined to satisfy future wants.

Apart from the question as to whether capital includes land, it might be thought that this conception of capital is practically the same as that of Professor Fisher, for whom capital is practically synonymous with wealth.[3] All goods satisfy future wants. When a man sits down to dinner, the wants which he is about to satisfy are still future. The only difference is one of degree.

All this is true. Yet a difference in degree may be so great as to amount to a difference in kind. For illustration take the concepts of utility and value. Everything which has utility does not possess value; but everything which has value must possess utility. Some things, such as water, are on the border line, possessing value in one place and not in another. There is in fact no hard and fast distinction between utilities which do and which do not possess value. Yet no one says that value is synonymous with utility.

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[1] See F. H. Knight, "Neglected Factors in the Theory of Normal Interest," vol. xxx of this Journal, pp. 284–90, where the importance of "time-preference" is questioned.

[2] Principles of Political Economy, Bk. I, chap. vi, § 4.

[3] The Nature of Capital and Income, chap. IV, § 2.

The distinction which I propose to make between capital and wealth is analogous. All capital is wealth, but all wealth is not capital. The element of time is essential to the latter. If wealth consists of things which are scarce and which satisfy wants, capital will consist of things which are scarce and which will satisfy wants after an interval of time. Wealth is measured in terms of value; capital might be measured in terms of value multiplied by time. The significance of this conception will appear more fully in what follows. An important modification is required to make it generally applicable; but it may be here remarked that, if a business man is trying to decide whether a certain undertaking will be profitable or not, he must find out not only how much outlay will be necessary but also the time which must intervene between the outlay and the attainment of the final result — how long his capital will be locked up, in other words.

The line, then, which may be drawn between capital and wealth is this: if either because the value is so small or the time so short that the interest which is or might be paid is negligible, the thing in question is wealth, but not capital; if the interest is worth taking into account, the thing is capital. In fact, capital might be defined as wealth which yields or could be made to yield interest.

It is hardly necessary to point out that any concrete commodity could be made in effect to yield interest if borrowers are willing to pay for its use during a certain time more than must be set aside to cover depreciation. In strict logic, of course, everything which will satisfy a want or yield a service in the future should be counted as capital, no matter how small the value or how short the time. The present value of any future service is theoretically different from the value of that service at the moment when it is being rendered, by a sum equal to what the discount on its value would be, if it were discounted at the current rate of interest. In theory, therefore, if this sum exists at all, the right to exact the service in question must be classed as capital. In practice, however, the distinction between capital and wealth is obvious enough, for if this sum were negligible the right in question would fall into the latter category only. For theoretical purposes, it must be admitted that the definition of capital here adopted is scarcely distinguishable from Professor Fisher's, except in excluding the gifts of nature. I believe that the present conception of capital will not be found to differ from that presented by Professor Taussig, who distinguishes between capital and land,[1] and points out that, for some purposes of economic analysis, producers' and consumers' capital are similar,[2] and that the difference between them "is one as to time when satisfaction or utility accrues."[3]

The subject of the present essay is the normal, not the market rate of interest. "Appreciation and Interest," and all fluctuations due to changes in the value of money, are left out of account. The element of risk, also, will be assumed to be absent.

While a certain amount of labor might be done for pleasure labor is, as a rule, disagreeable and is only expended with some ulterior object in view. Now the only possible object of labor, from the point of view of economics at any rate, is the satisfaction of wants.

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[1] Principles of Economics, chap. XXXVIII, § 1; chap. XLVI.

[2] Chap. V, § 2; chap. XL, §§ 3, 4.

[3] Chap. V, § 2, note; cf. chap. XV, § 4.

In general, however, everyone desires to reap the reward of his labor as soon as possible. The existence of interest would be alone sufficient to account for this; for if goods can be exchanged, and if present goods are worth more than future goods, the former would always be preferred, for every man prefers a greater to a less. If, however, a person could be supposed ignorant of the existence or possibility of interest, it would be necessary to account for his undoubted preference for present over future goods on psychological grounds, as Böhm-Bawerk and his followers do. But this simple preference is all that we need postulate. We shall find it unnecessary to attempt to measure it, or to assume that it has ever been greater than it is at present, altho, as John Rae has so well shown,[1] we should be amply justified in doing so if it were necessary.

In spite of the impatience which thus is natural to human beings, some labor is always being expended in providing for wants in the future — sometimes in the very distant future. If both labor and waiting for the result of labor are disagreeable, this can only be explained by the fact that in the long run labor is saved. It is found that wants can be satisfied with less labor in the aggregate if part of the labor is applied to preparatory operations, and the whole is spread over a considerable time, than would be necessary if all the labor were applied directly to the satisfaction of immediate wants.

" There being need of a given amount of food, it can be obtained with less expenditure of labour, if the labour is mostly performed several months before the supply becomes necessary, than if nothing is done until the day is at hand on which there is a demand for food. If the labour is delayed until the time arrives, the only remaining resources for acquiring nourishment are hunting, fishing, berrying and the like; and of these the supply is very limited and much work is required to obtain a supply from these resources if any considerable quantity is required. On the other hand, if land is ploughed, prepared and sowed to wheat several months before there is a scarcity of food, a much larger amount of food is produced, and at a much less expenditure of labour. Again, a supply of cloth being essential, a much larger quantity can be obtained for the same labour if, previous to the time when it is required, a part of the labour has been employed to prepare machines on which the cloth can be woven."[1]

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[1] New Principles of Political Economy, Bk. II, chap. vii.

Now, capital consists of things which are produced by labor, and which satisfy wants after an interval of time; and all labor has for its object the satisfaction of wants; therefore, labor which will not satisfy wants until a future time is, in reality, devoted to the production of capital. What the accumulator of capital does for society is to enable — or compel — people to labor for the sake of future benefits, whereas without him they would be inclined to devote all their labor to the satisfaction of immediate wants. The final result of his intervention is that society has its wants more amply satisfied with far less labor than would be necessary if production were carried on without capital. The possibility of interest is thus accounted for.

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[1] S. N. Patten, The Fundamental Ideal of Capital, vol. iii of this Journal, p. 189.

II

The actual benefit derived from the employment of capital in any particular instance could be ascertained in the following way. If we could measure the labor expended in any preparatory operation; for example, in making a particular machine, and also measure the labor saved by this machine — that is, the difference between the labor required to produce a given commodity with the machine and the labor which would have been required without it — we shall know what return is yielded by the labor expended in the preparatory operation in this instance.

It is often impossible to determine where the preparatory labor ends and where the labor immediately necessary for consumption commences. Often the very same operation is necessary for consumption in the present and preparation for the future. Further, nearly all operations require tools, the fruit of previous labor, which must accordingly be credited with a part of the gross result. As far as possible both these difficulties are avoided in the following illustration.

Suppose some villagers dwell near a practically inexhaustible oyster bed, from which they can supply themselves by direct labor, without tools. If one man builds a fishery of brushwood (for which he would require no tools worth taking into account,[1] he will probably be able to repair the fishery completely, and catch as many fish as are in his estimation equivalent to the oysters he gathered before, with less labor than would be necessary to obtain the latter. The labor thus saved, expressed as a percentage of that required to build the fishery, will give the rate of interest yielded by the labor thus invested. The fishery being everlasting, the return will be perpetual. It may be assumed for the present that the man will eat either fish or oysters indifferently, but that his desire for either is limited and remains unchanged. If all capital be similar to such a fishery, the fact that it earns interest should excite no surprise.

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[1] Such fisheries are common on both shores of the River St. Lawrence, below Quebec.

The causes affecting the rate of interest may be illustrated under the same hypothetical conditions, and the fact that it never sinks to zero accounted for.

If the beach available for such fisheries were limited, their number could not increase indefinitely without making fish harder to catch. If some sites were superior to others, the men who occupied the former would obtain an extra return which must be classed as rent. If all sites were equally advantageous, it is evident that after a certain point the number of fish caught by means of the fishery in a day's labor, or the number of days' labor required to catch a given quantity of fish, will vary inversely with the number of fisheries in use. Since all the fisheries are supposed interchangeable, the last one built would represent the marginal increment of capital, and its returns would, in the absence of other circumstances, fix the rate of interest in the village.

If every fishery were worked by its owner, no one might be aware that they were yielding interest. But if fisheries were loaned, interest would be paid. For, if fisheries are freely reproducible in a short time, their capital value would be fixed by that of the labor required to build them; but their annual value would be equal to that of the labor they saved. The number of days required to gather the desired supply of oysters would be the standard, for the men without fisheries would continue to labor in this way.

Suppose, now, new fishing grounds become available, where fisheries are no harder to build, but where the desired supply of fish could be caught in fewer days than had been necessary on the original beach. The returns obtained from labor employed in building fisheries under the new conditions would fix the general rate, and the capital value of the old fisheries would fall till they yielded the same proportional return as the new. This would amount to a rise in the rate of interest.

But even if the beach available for fisheries were unlimited, their returns would tend to fall. Without a fishery we may suppose every man to have worked for one hundred days a year at gathering oysters. The first fishery may save its owner fifty days. Now, a second fishery may enable him to catch more fish in a day than he could with only one, but it cannot save him fifty days also, for that would mean his catching his supply of fish, and keeping both fisheries in repair, without any labor whatever. Yet a saving of fifty days would be necessary if the second fishery were to yield the same return on the labor expended in building it. In other words, after a certain point, additional fisheries will yield diminishing returns, whether or not space is limited.

Again, suppose an invention by which a fishery yielding a greater return can be built with the same amount of labor, or a fishery yielding the same return can be built with less labor; in this case also the capital value of the old fisheries would fall, and the general rate of interest rise. Eventually, however, it would tend, as before, to fall owing to the multiplication of fisheries. No single invention could be a permanent cause of high interest.

The rate of interest is thus shown to be reduced by an increase in the number of fisheries, and raised temporarily, but not necessarily in the long run, by the opening up of new fishing grounds, and by inventions.

The greater the number of fisheries, and the greater the return obtained from each, the more labor will be set free; and, if this labor be spent in building additional fisheries, the faster these will multiply. We could imagine such a number being made that the rate of interest would fall to zero. Probably this stage would never be reached, for the villagers would prefer one hundred days present leisure to, say, four days leisure annually for all future years, and this would keep the rate of interest at, let us suppose, 5 per cent. Just what the rate would become would depend on the intensity of the villagers' desire for present leisure, and the rate at which they discount the future.[1]

The intensity of the villagers' desire for fish would also affect the rate of interest. In this connection an answer will be given to the criticism which Böhm-Bawerk brings against productivity theories — that they fail to explain surplus value.[2]

Hitherto it has been assumed that fish and oysters would satisfy the same wants, and that the total consumption of both together was constant. We shall now discontinue this hypothesis, and assume instead that the total expenditure of labor is constant. In that case, the advantage of a fishery would be that it would enable a man, expending a given amount of labor, to catch a number of pounds of fish larger than the number of pounds of oysters obtainable by a man without a fishery, with the same expenditure of labor. The return yielded by a fishery, then, would depend on the value of this surplus in the quantity of fish, which would be determined by the rate at which the value of fish, measured in oysters, would fall owing to the increase in the supply;

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[1] This part of the argument is the outcome of a suggestion of Professor Taussig's. It seems to be in agreement with Professor Fisher's theory regarding preference for present over future goods.

[2] Capital and Interest, Bk. II.

in other words, on the elasticity of the demand for fish, or on the intensity of the villagers' desire for that article of diet. If the physical productivity of the fisheries was given, the general rate of interest would vary directly with the intensity of the community's desire for their product.

This cause, which below will be referred to generally as the intensity of wants, is thus shown to affect the rate of interest if the supply of fish is given, but it would also affect the number of fish caught and, through that, the number of fisheries which would be built. For, the more fish our villagers desire to consume, the more labor will be devoted to catching them, and hence, if the amount of leisure enjoyed remains constant, the less labor can be devoted to the construction of additional fisheries. It follows that the more intense the villagers' desire for fish, the less will be the tendency for the rate of interest to fall owing to an increase in the supply of fisheries.

It may therefore be stated that the rate of interest will tend to vary with the intensity of the villagers' desire both for leisure and for fish.

The main contentions of the present essay have now been indicated. In what follows the foregoing reasoning will be applied generally.

III

It was provisionally stated above that capital should be measured in terms of value multiplied by time. But the difficulty with this is that the value of capital depends on the rate of interest. That is to say, if the income from a certain set of capital goods is given, their value will vary inversely with the rate of interest.

There are cases, however, in which the above method of measuring capital would be correct. Of freely reproducible goods the value conforms in the long run to their cost of production. The rate of interest generally affects the cost of production, because more capital is required in the making of some goods than of others; that is to say, the labor is differently distributed in point of time. In some cases, however, this does not happen. Certain goods may exchange in direct proportion to the labor required to produce them, and their relative values may not be affected by changes in the rate of interest. In these circumstances, capital could with perfect accuracy be measured in terms of its value multiplied by the time intervening between the moment when the outlay was incurred, and the moment when the capital has rendered all the services of which it is capable.[1]

But the quantity of capital must be expressed by a method which will apply not only to some cases but to all. Such a method will suggest itself if the foregoing reasoning is carried a step farther.

All capital is the result of labor. All labor may be said to have for its object the satisfaction of wants, but capital satisfies wants only after an interval of time. A given quantity of capital, then, means a given quantity of labor which will not finally result in satisfactions until after a given interval of time. The essentials of capital are labor and time, and an increase in either of these, the other being constant, or in both together, would constitute an increase in the quantity of capital. It is important to notice that some interval of time must elapse between the completion of the labor and the enjoyment of its result; otherwise the product of the labor would not be capital (as that word is defined above) but only wealth.

The circumstances affecting the demand for capital will first be considered. But in this connection the idea conveyed by the word demand requires careful analysis.

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[1] See John Rae, New Principles of Political Economy, Bk. II, especially chaps. i and ii.

Demand is defined by a recent writer[1] as "effective desire, that is, desire coupled with the ability to pay the current price for the desired object." Dr. Marshall writes, "When we say that a person's demand for anything increases, we mean that he will buy more of it than he would before at the same price, and that he will buy as much of it as before at a higher price."[2] Now, if he would pay the higher price for a smaller quantity than before, would not his demand be increased in that case also? His demand might be said to consist in the price he offers, and not in the quantity he desires, for any person's desire for a thing that has value is infinite. In other words, the demand for any commodity could be conceived to have nothing to do with the quantity of that commodity, but might refer solely to the quantity of other commodities, or rather the value, which is offered in exchange for it. The same thing applies to capital. The demand for capital might be said to consist simply of the amount of interest it can earn.

"At any given period the rate of return on capital depends on the gain in productiveness from the least effective part of the capital. So far as this proposition is concerned there seems to be substantial agreement among modern economists."[3] If this be granted, any circumstance which will increase the advantage attributable to the last instalment of capital, without necessitating a proportional diminution in its amount, will increase the demand for capital.

The first circumstance which might be expected to act in this way is the development of new lands. If a new country containing abundance of fertile land, like the Canadian Northwest, is opened up for settlement, a given crop can be raised with less labor in it than would be required in a densely populated country like England. But before these new lands can be cultivated much labor must be spent in the construction of buildings, railways, etc., a great part of which will earn nothing for years, and which will not render all the services of which it is capable perhaps for centuries. Nevertheless, after sufficient time has elapsed, the satisfactions which this labor will yield, or the return to this investment, are much greater than could be obtained from the same outlay in England.

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[1] H. R. Seager, Principles of Economics, § 42.

[2] Principles of Economics, Bk. III, chap. iii, § 4.

[3] Taussig, Principles of Economics, chap. XXXVIII, § 5.

If an interval of time must elapse between the expenditure of labor and the enjoyment of its result, the product of that labor is capital. If the whole productive process obtains a greater reward, capital must reap at least part of the benefit. Wages will also rise, but inasmuch as so large a share of the whole product must be imputed to capital, laborers could not hope to engross the whole advantage of the increased return. The rate of interest would therefore tend to rise. This explains why interest is always high in new countries.

Inventions are the second of the circumstances which affect the demand for capital. The effect of every successful invention must be to enable the same labor to produce greater returns, or less labor to produce the same returns. In any case the labor will become more effective, and the returns greater in proportion to the outlay.

The chief benefit may accrue either to the laborers or to the owners of the capital employed in that branch of production. If the effect of an invention is to increase the time which must elapse between the expenditure of the labor and the enjoyment of its final result, it might be expected that the owners of capital would reap the whole benefit of the increased return, for they would be placed in a more advantageous position in competing with those who endeavor to render the same service directly, with the aid of little or no capital. Electric tram-cars, for instance, compete more effectively with cabs than horse cars could possibly have done.

If the effect of the invention is to reduce the interval of time during which labor must wait for its final result, interest might be expected to show less tendency to rise than wages. For, in the absence of a patent, and if the process were not kept secret, new opportunities would be opened to those who could afford to wait but a short time — to employ but little capital — and the latter would be placed in a better position to compete with those who rendered the same service by means of a more roundabout process. Inventions, such as knitting machines, which enable domestic manufactures to compete with goods made in factories, would illustrate this phenomenon. The tendency in this case also might be to raise interest, but the effect on wages would be greater.

Under actual conditions, the question of prices must also be considered. In the absence of a patent, these might be reduced so much that the consumer would be the only one to benefit. It seems, therefore, futile to attempt to forecast the effect of any particular invention on interest and profits in general.

These observations refer to the proximate effect of inventions on interest. Their ultimate effect requires separate consideration.

For the present we shall make the assumption that the aggregate consumption of society remains constant. For brevity the single word " consumption " is used as equivalent to what Professor Fisher calls " enjoyable objective services,"[1] and includes not only material goods but also labor of every kind which satisfies wants directly and immediately. It is synonymous with the whole real income of society, and is the final object of all its labor.

If, then, the aggregate consumption of society were constant, it is evident that in the long run the effect of every successful invention would be to lessen the labor required to provide for this consumption. As has been pointed out by Professor Taussig, the effect of this might be that people would have more leisure; but we may assume that the leisure they enjoy also remains constant, and that everyone continues to work as hard as before. Under these suppositions, what could they work at? Not the satisfaction of immediate wants, for that is contrary to the hypothesis of constant consumption. They must, therefore, spend the labor saved by the invention in satisfying future wants, that is, in producing capital. But an indefinite increase in the supply of capital must lessen the return to the last instalment of capital, and cause a decline in the rate of interest. The conclusion is that if consumption were constant and people allowed themselves no more leisure, the ultimate effect of any single invention would be to reduce the rate of interest. Only a succession of inventions would keep the rate of interest high indefinitely.

Exactly the same reasoning applies to the opening up of new countries. Their effect on the rate of interest, both immediately and ultimately, will be the same as that of inventions.

These two are in essence different phases of the same general phenomenon. Invention consists in the discovery of new properties, or new ways of utilizing the properties of existing materials. The opening up of new lands consists in making an addition to the stock of materials presently available. The above discussion, therefore, has shown the effect of an increase in the supply of natural objects, which, being a factor in the production of wealth, constitute a third essential element of capital. And, it need hardly be said, inventions and the opening up of new lands cannot be looked upon as an exhaustive list of influences of this sort. Anything which increases the efficiency of labor suddenly may have a similar effect.

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[1] The Nature of Capital and Income, chap. X, § 1.

None of these phenomena, however, can be regarded as offering a final solution of the problem of interest. While their immediate effect may be important, it is neutralized after a certain time has elapsed. How great will be that immediate effect, and how much time will elapse before it is neutralized, will depend on other circumstances, to the investigation of which we now proceed. These other circumstances are the permanent and ultimate forces acting on the rate of interest and accounting for its continued existence. They act independently of new discoveries, which may therefore from now on be disregarded.

The third circumstance which may affect the demand for capital is variations in the intensity of wants. It is a commonplace that people's desires for some things are more intense than their desires for others; and that any person's desire for a particular thing is more intense at one time than at another. Is it not possible that there might be an increase in the intensity of every person's desire for things in general ? Such would be the consequence, for instance, of a spread of the spirit of recklessness and extravagance. Wants in this connection are intended to refer to the present; [1] and it may be laid down as a general proposition that, the more intense are people's wants, the more they will consume. Variations in the intensity of wants thus become synonymous with variations in consumption; for the intensity of wants can be measured, and can be conceived to affect the rate of interest, only by their effect on actual consumption.

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[1] The intensity of wants thus corresponds to Professor Fisher's "time-preference" (The Rate of Interest, chap. 6). Neither the one nor the other could influence the rate of interest except by affecting present consumption.

Let us consider the effect of a general and fairly sudden increase in the intensity of wants. It means that more direct service and immediately consumable commodities are demanded. But the stock of these on hand at any given time is not indefinitely extensible.[1] If it were perfectly rigid, it would seem certain that the prices of the existing supply would rise. This supply might, however, be increased without a rise in prices; but that can be done, in general, only by making inroads on the stock which was originally destined for future consumption. Supposing wants to continue to increase, or even to remain constant at the higher level, a scarcity must shortly be felt, relatively to the demand, and prices would rise. Exactly where the rise would first be felt would depend, it seems to me, on the relative bargaining capacity of producers, traders, and consumers. Very likely "materials" and goods nearly but not quite ready for the consumer would be the first to rise in price, and the prices of "foods" and goods immediately consumable would follow the former. It seems, however, impossible to escape the conclusion that an increase in the intensity of wants would cause a rise in the prices of immediately consumable goods and services.

A general rise in all prices is not a necessary consequence. The rise in the prices of the above kinds of goods and services would only be relative to those of such goods as could not be consumed till after a considerable time had elapsed. If the general price level is fixed within narrow limits by the quantity of money in circulation, the prices of the latter goods might fall to counterbalance the rise in the prices of the former. If so, that would amount to a rise in the rate of interest, for the premium in value of present over future goods would be increased.

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[1] See Taussig, Wages and Capital, pp. 57, 88–90.

There is another ground on which an increase in the intensity of wants might be expected to cause a rise in the rate of interest. If a larger quantity of immediately consumable goods is demanded, more will presumably be sold. Then, provided only that their prices do not fall, the profits obtained by the owners of existing capital must rise also. It is true that money wages would increase, but chiefly those of laborers who satisfied wants directly. Laborers who coöperate in production with a great deal of capital could not hope to reap the whole benefit of the larger gross receipts, for the specific productivity of the last instalment of capital — the output of each machine employed in manufacture — would be augmented.

If the rate of interest rises owing to an increase in the intensity of wants, a decrease in their intensity would tend to cause the rate to fall. No further attempt will be made to prove this proposition. It appears to be the exact converse of the first, and all the phenomena might be expected to act in exactly the opposite direction.[1] We may therefore state as our first general conclusion that the rate of interest tends to vary with the intensity of wants or, what amounts to the same thing, with the total quantity of commodities consumed and of services enjoyed.

It may be objected to the above reasoning that it proceeds upon the assumption that the total quantity of capital will not increase. Now, it may be asked, if a greater quantity of goods than before can be sold at the same or higher prices, and if the employment of capital becomes more profitable in consequence, will not the supply of capital be increased, so that the advantage of the marginal instalment will be diminished, and the rate of interest fall? It might even be contended that the supply of consumable goods would be increased so much that their prices would fall to their former level, which would be a further force tending to depress the rate of interest. The reply to this is, that an increase in the intensity of wants must involve an increase in the quantity of goods and services consumed, and by itself could not possibly lead to an increase in the supply of capital, but must on the contrary tend to diminish it. Only one circumstance could counterbalance this tendency; and in this circumstance will be found the remaining important factor influencing the rate of interest.

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[1] See Taussig, Principles of Economics, chap. 41, on "Overproduction and Overinvestment."

As capital is conceived in the present essay, it is partly in the hands of consumers, partly in those of producers. As regards consumers, it is obvious that, while their incomes remain the same, the more they spend in satisfying immediate wants, the less they can save to provide for the future. Therefore, so far as consumers are concerned, the supply of capital will tend to vary inversely with their immediate consumption.

The same conclusion can be reached as regards producers. If the supply of capital is given, the only way in which present consumption can be increased is by increasing the amount of labor devoted to satisfying wants immediately. But the total amount of labor of which any community is capable — the gross annual product—is not unlimited. If we assume it to be constant, the more labor is devoted to satisfying wants immediately, the less can be devoted to the production of capital, with the object of satisfying wants in the future, and the smaller will be the future supply of capital.

As regards both consumers and producers therefore (if we assume the total quantity of labor expended to remain constant) in the long run the supply of capital will vary inversely with consumption.

Just as an increase in the supply of capital will tend to cause a fall in the rate of interest, so an indefinite shrinkage would cause it to rise, whence it follows that the rate of interest tends to vary inversely with the supply of capital. Accordingly, the proposition that the rate of interest tends to vary directly with the aggregate consumption of society is not invalidated, but is given a further ground to rest on.[1]

It remains to investigate the important influence tending to prevent a rise in the rate of interest, and of prices, owing to increased consumption. The proposition that the rate of interest tends to vary with the intensity of wants is only valid upon the assumption that the total quantity of labor expended by the whole of the community is constant. This cannot normally be the case, for an active demand stimulates trade activity, and induces those who supply the market to expend more labor in the task. It is now necessary to define a little more precisely what is meant by an increase in the quantity of labor expended, and what will be the effect of such an increase on the rate of interest.[2]

The total quantity of labor of which any given community is capable depends upon the number of persons composing it who are able to work, and on the physical, mental, and moral qualities of each. Any investigation into the causes which may determine these circumstances clearly lies beyond the scope of the present inquiry. It is necessary to assume that the general character of the population remains the same.

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[1] Reverting to the possible effects of new discoveries, it is evident that most of them will increase the intensity of wants, or rather, what amounts to the same thing, will create new desires. The invention of motor cars, and the importation into Europe of diamonds from South Africa and of tobacco from America, have caused a general increase in the consumption of such articles, and in the resources devoted to their production. In so far, therefore, new discoveries have a permanent and ultimate as well as an immediate tendency to raise the rate of interest. Probably this has been their general effect.

[2] In the following reasoning I am aided by a suggestion from Professor Taussig.

The total quantity of labor which any population will actually expend during a given period, a year for example, depends in the first place on the total amount of time devoted to labor. That is, it depends on the number of hours in a day and of days in the year during which each of its members works. For each man, therefore, it varies inversely with the amount of leisure he allows himself. The term "labor" is of course intended to include not only manual labor but all forms of clerical and intellectual labor as well. We may therefore conclude that, other things being equal, the total quantity of labor expended varies inversely with the total amount of leisure enjoyed.

If the time actually spent in labor is given, the quantity of labor will depend on the intensity, dexterity, and intelligence with which that labor is applied; in other words, on the efficiency of labor. The measurement must in this connection be objective, as only thus can it have any application to the present reasoning. It may therefore be stated that the total quantity of labor expended by any population in a given time varies directly with the efficiency of their labor, and inversely with the amount of leisure they allow themselves.

It is now necessary to consider briefly the effects of an increase in the total quantity of labor expended. Supposing total consumption to remain constant, the quantity of labor which must be expended in the immediate and direct satisfaction of present wants also remains constant. Therefore, if the total quantity of labor expended by the community is increased, more labor must be devoted to satisfying future wants, in other words, to the production of capital. Accordingly, if consumption remains the same, the supply of capital will vary with the quantity of labor expended. But it will not, I think, be disputed that under the same assumption the rate of interest would vary inversely with the supply of capital. Recalling what was established above as to the effect of variations in consumption, it becomes possible to formulate the conclusions of this essay in the single proposition — the rate of interest tends to vary directly with the aggregate consumption of society, and with the amount of leisure which people allow themselves,[1] and inversely with the general efficiency of labor.[2]

To summarize my conclusions: in the view here presented all capital consists essentially of labor-saving devices. Capital yields interest because a given product can be turned out with less labor with the aid of capital than would be necessary without this aid. That is equivalent to saying that the same labor can turn out a larger product with capital than without, which is the result arrived at by those who support the productivity theory.

Professor Carver gives an able presentation of this view.[3] But he goes on to point out that if the supply of capital increased indefinitely, interest would sink to zero. What, then, prevents capital from increasing up to this point? He answers that question as follows:

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[1] As this proposition was originally conceived, the element of leisure was omitted. Its inclusion is due to Professor Taussig's suggestion.

[2] As to new discoveries, the above observations must now be further qualified. In addition to saving labor they may increase its efficiency. This would be the usual effect of anything which creates new or more intense desires, for it offers new motives for exertion; and increased consumption may also increase the general capacity for labor. For this reason, some new discoveries may have a stronger tendency to reduce the rate of interest than to raise it.

[3] The Distribution of Wealth, chap. 6.

"Such a check is found in the conjunction of two facts: first, the owner of capital must wait for its earnings to come in; second, as a rule, men do not like to wait."[1] In his application of this he seems to regard waiting as, in some sort, a conscious process.

While it is quite true that, in general, people are anxious to reap the reward of their labor as soon as possible, it does not seem necessary to regard labor as a separate factor of production. The answer to this question suggested by the present essay would be that capital is always able to earn interest simply because people work so little and consume so much.

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[1] The Distribution of Wealth, p. 228.

MARKETING AGENCIES BETWEEN MANUFACTURER AND JOBBER

SUMMARY

I. Introductory. Reasons why manufacturers employ intermediaries to reach jobbers, 571. — Distinguishing features of commission houses, manufacturers' agents, and brokers, 574. — II. Commission houses in the textile trades, 576. — III. Manufacturers' agents and purchasing agents in the hardware trade, 580. — IV. Manufacturers' agents in the grocery trade, 586. — V. Brokers in the grocery trade, 589: flour brokers, 591; canned goods brokers, 594; sugar brokers, 596; coffee brokers, 598. — Conclusion. 599.

I. INTRODUCTORY

IN his *Some Problems in Market Distribution*, Mr. A. W. Shaw describes as the " orthodox type in distribution," the marketing of goods by manufacturers through selling agents to jobbers, and thence to retailers, and cites the textile trades as an example.[1] He further explains that the tendency is for the manufacturer to sell direct to jobbers, thus doing away with the services of the commission house. It is true that there is this tendency, and yet the use of an intermediary middleman between producer and wholesaler is much more common than is usually thought and occurs in a number of important trades. Furthermore, this middleman appears to be holding his own to a surprising extent, and there is every indication that he will continue to be an important factor in the marketing organization for an indefinite future period.

This class of middlemen comprises commission houses (sometimes known as selling houses), manufacturers' agents, brokers, and purchasing agents. Commission houses are common in the cotton, woolen, and silk goods trades, and are found to a certain extent in the hosiery and knit goods and " notions " trades. Manufacturers' agents are common in the grocery and hardware trades, and brokers are very important in the grocery trade. An interesting form of the purchasing agent is found in the hardware trade. Similar middlemen appear to a certain extent in other trades, but the reason for their existence and their methods of doing business may be understood by studying them in connection with the three trades enumerated above, viz., textiles, hardware, and groceries.

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[1] P. 72. Cf. also Shaw's An Approach to Business Problems, pp. 168 ff.

The reason why manufacturers have middlemen market their goods at all is that they, the middlemen, can perform the marketing functions more cheaply than can the manufacturers themselves. Perhaps the principal reason why the middleman can do this more cheaply is that he combines the outputs of a number of manufacturers, thereby using one selling organization to sell a larger number of different goods, or a larger volume of similar goods, than would be the case if each manufacturer had his own sales organization. The selling expense per unit of goods is lower when one salesman can sell a line of goods rather than a single product. It follows that the large manufacturer, especially if he makes a line of different articles, can often afford his own sales organization — sometimes taking over even the jobber's functions, and selling direct to retailers. In a few cases, manufacturers even sell to consumers through their own retail stores.

It also follows that the small manufacturer, especially if he makes a single product, would often be put to prohibitive expense if he had to maintain a sales department to reach the thousands of retailers all over the country — and for the same reason he often finds it advantageous to use a middleman even to reach the few hundreds of jobbers. Other considerations, such as need of financial assistance and remoteness from trade centers, also enter as factors which often make it desirable for manufacturers to employ such an intermediary in order to reach jobbers.

The services performed by commission houses, manufacturers' agents, and brokers can best be understood in a general way by reference to the marketing functions, which are as follows: assembling, or the seeking out of commodities from various sources, making business connections, etc.; storing, or the holding of goods at convenient points; financing, or the giving of credit, making loans and advances, etc.; assumption of risks from price fluctuation, deterioration, style changes, etc.; rearrangement, or the sorting, grading, and packing function; selling (which includes advertising); and transportation (the most important feature of which is the delivery service). It appears that intermediaries between manufacturers and jobbers perform but few of these functions. They rarely store commodities for their principals; they assume but little risk, because they do not take title to the goods; they have practically no sorting and grading because they sell in large quantities and rarely handle the goods at all; and they do none of the transporting. This leaves the actual selling of the goods, which is their most important function; financing, which is important in the textile trades but not in the hardware and grocery trades; and assembling which they perform by representing manufacturers who are often located in different parts of the country.

The purchasing agent is fairly distinct from the other three forms of middleman described here because he represents buyers rather than sellers, but it is rather difficult to draw clearly the lines of demarcation between commission houses, manufacturers' agents, and brokers, especially as they merge into each other in certain cases.

The distinguishing features of commission houses, which are found primarily in the textile trades, appear to be as follows: They generally market the whole output of each mill that they represent or the whole output of at least one of the mill's products, such as its cotton yarn, or its woven fabrics; their financing function is much more important than in the case of brokers and manufacturers' agents; they handle goods of the same kind for different mills; they usually have more power in determining the price at which goods shall be sold than do the other two kinds of middlemen; they handle goods which are not usually branded and advertised; they receive their compensation in the form of a percentage commission on sales; they often perform the additional service (which may be considered a part of the selling function) of furnishing designs for the mills, and telling them what fabrics and designs to run through the looms.

The distinguishing features of the manufacturers' agent, who is found in the hardware and grocery trades, appear to be as follows: They more commonly sell for their clients in a restricted, tho fairly extensive, territory, so that a manufacturer may have two or more agents in different sections of the country — tho there are exceptions to this, especially in the hardware trade; their financing function is unimportant as compared with commission houses, inasmuch as they rarely make advances to or otherwise finance manufacturers; they handle a variety of goods of the same general class, such as various kinds of hardware, but they sell each particular article for only one manufacturer; sometimes, especially in the grocery trade, they handle branded and advertised goods; similar to commission merchants, they usually receive their compensation in the form of a percentage commission, but sometimes they receive salaries or lump-sum-annual payments, and not infrequently, flat rates per package of goods sold; they usually have to follow the prices set by the mills rather than enjoy the privilege of setting prices themselves.

The distinguishing features of brokers, at least as they appear in the grocery trade, are as follows: Their field of activity is more limited than in the case of commission houses and manufacturers' agents, since they frequently sell to jobbers only in the city where they are located; the "pure" broker does not represent any particular manufacturer, but places his orders from purchasers with any manufacturer whom he may select at the time (there is a tendency for so-called brokers to represent definite manufacturers in restricted markets, as will be pointed out below); they usually have no financing function; they sell the same kind of goods for different manufacturers; they handle principally unadvertised goods; they usually receive flat rates per package or per carload, rather than a percentage compensation; they have very little leeway in determining prices, usually having to get them "confirmed" by manufacturers.

The foregoing features of these different kinds of middlemen will be brought out more clearly in the detailed descriptions that follow. In many cases, trade terminology and changing methods of doing business render it difficult to distinguish between commission houses and manufacturers' agents on the one hand, and between manufacturers' agents and brokers on the other. The distinguishing features as described above apply to the pure types of these three kinds of middleman.

II. Commission Houses in the Textile Trades

The commission houses in the cotton and woolen goods trades will not be discussed in detail in this place, because they have been admirably described by others.[1] Brief descriptions drawn largely from these two sources will be given, however, for purposes of comparison.

The commission house or selling house in the cotton and woolen goods trades developed at an early date, largely because of financial relations with the mills. Many of the first commission houses had previously been engaged in the import trade and had amassed capital and established credit relations, which placed them in an advantageous position to finance early American mills. The principal functions of these selling houses today are financing the mills and selling their goods. In financing they employ various methods, such as direct loans to mills, endorsing the mill's paper, guaranteeing accounts, buying the mill's stocks and bonds, and " cashing sales." To " cash sales " means that the commission house turns over to the mill the value of goods sold, even tho the buyers of the goods may not pay until a month or more later. In the silk trade, this is often done at the end of each month, the commission house deducting interest until the date when accounts are payable. Textiles are sold on fairly long terms, so that by having their sales " cashed," the mills are receiving their money long before payment is actually made by the purchasers of the goods.

The commission house in the textile trade is usually the sole agent for each mill whose goods it handles, tho sometimes a mill employs two selling houses, one for its yarn or tops, and one for its fabrics. A selling house usually represents from five to fifteen mills — sometimes a larger number. The same house often sells both wool and cotton fabrics. Most of these commission houses have their main offices in New York, but many of them have branches in other large cities. They have regular sales organizations and send out traveling salesmen. They sell principally to jobbers and to the "cutting up" trade (clothing manufacturers), but also to large retailers (department stores and mail order houses) to a certain extent.

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[1] See Copeland, Cotton Manufacturing Industry of the United States, chap. 11, and Cherington, Wool Industry of the United States, chap. 7.

In addition to the actual sale of the goods, it is common for these houses to furnish designs for the mills, and to instruct the mills what to run on their looms. Since they are closely in touch with style changes and trade conditions, they are of considerable service to the mills in this respect. The commission varies for different goods, and for different mills. In the cotton goods trade it is about 1½ to 2 per cent for northern mills, and from 3½ to 4 per cent for southern mills. It is higher for the latter because of the greater financial assistance required, and the greater risk involved. Many of the northern mills have become so strongly intrenched financially that they no longer need the financial assistance of the selling houses. In the woolen industry, the commissions run from 2 per cent on staples to as high as 5 per cent on "fancies."

There is a decided tendency for the larger mills to do away with commission houses, establish their own selling organizations, and thereby sell "direct," (which means direct to jobbers and the cutting-up trade). In some cases, commission houses have become so closely connected with mills in a financial way, that the selling house has merely been transformed into the sales department of the manufacturing company. The Amoskeag

Manufacturing Company, one of the largest manufacturers of cottons and worsteds in the country, furnishes an interesting example of this; until a few years ago it sold through a selling house in New York, but the two concerns became so closely connected that the selling house finally gave up its old name, and became a part of the Amoskeag Company (the sales department) without change of personnel. In the woolen and worsted goods trade, direct sale became much more important when the American Woolen Company was formed, thus combining in one sales organization the outputs of some forty mills that had previously sold through commission houses. To be sure, the American Woolen Company of Massachusetts (the manufacturing company) sells through the American Woolen Company of New York (the selling company) on a commission basis, but to all intents and purposes the latter is the sales department of the former, and it is correct to say that the American Woolen Company sells " direct."

In the silk goods trade, the commission house occupies much the same position as in the cotton and woolen goods trades, except that the financing function is perhaps a little more difficult to perform, the selling house is more apt to carry a stock of finished goods, and the commissions charged are higher. That the financing function is more difficult to perform is due partially to the fact that there are a great many small silk mills of doubtful financial strength. Raw silk is sold to mills on six months' time, thus enabling manufacturers to make up goods, and get money advances from their selling houses even before they have paid for their raw material. This situation makes it relatively easy for men with little capital to start silk mills, and militates against financial stability in the trade at large. Furthermore, silk fabrics are more in the nature of " fancies " than cottons and woolens, and their market values are not so definite; hence they do not constitute such good security for the basis of loans.

The commission house is also used in the hosiery and knit goods trade. To quote from a recent Government bulletin on the knit underwear industry:[1]

> A commission house will take all, or the greater part of the output of a plant and will receive a certain commission, usually from 7½ to 10 per cent. This commission covers discount, freight, cartage, storage, and insurance, the manufacturer having no further responsibility in regard to the finished goods. The commission house sells to jobbers or retailers and stands all discounts, etc., and generally guarantees the account.

A similar bulletin on the hosiery industry shows that out of seventy-three establishments studied, only three sold through commission houses.[2]

Not only is the commission house employed by manufacturers of textiles, but also by manufacturers of many other articles that reach consumers through dry goods stores. These articles fall principally in the class known as "notions," but comprise some that would be classed as toilet articles. They comprise such things as pins, hair pins, buttons, hose supporters, hooks and eyes, hair brushes, combs, shaving brushes, etc. Many of these articles are made by small manufacturers who cannot market them efficiently individually. The commission house sells these goods principally to notions jobbers and dry goods jobbers. The tendency is for this class of manufacturers to go direct when they become large enough, and when they no longer need the financial assistance of the commission house.

There are only four or five commission houses of this kind, all located in New York, but they do a considerable business, and are an important factor in this trade. The writer has obtained information from only one, but its methods are probably fairly typical. It represents about forty different manufacturers, but the bulk of its business is done with half of these. This particular house also handles knit goods (hosiery, sweaters, and underwear), but this combination is unusual, and is found in only one other house. It handles about one hundred different items, and carries the same line for competing factories except when the factory gives exclusive sale to the commission house, in which case it handles the line for only the one manufacturer. It finances manufacturers either by making advances on unsold goods (up to 75 per cent of value in some cases), or by cashing sales. Goods in this trade are sold on ninety days' time (2 per cent ten days, net thirty, with sixty days dating), so that by having his sales cashed, the manufacturer gets his money within thirty days, whereas he would otherwise have to wait from seventy to ninety days. The commissions on notions run from 7½ to 10 per cent.

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[1] Bureau of Foreign and Domestic Commerce, Miscellaneous Series, No. 32, p. 135.

[2] Ibid., No. 31, p. 165.

III. Manufacturers' Agents and Purchasing Agents in the Hardware Trade

The reason for the existence of intermediaries between hardware manufacturers and jobbers is found in the fact that many hardware manufacturers confine their attention to single articles, or single lines of articles. For example, one manufactures nothing but scissors, another saws, another wrenches, and so on. Furthermore, many such manufacturers have relatively small outputs, and a good many of these are located at a distance from market centers, so that they find it difficult to keep in touch with trade conditions.

A large manufacturer, especially if he makes a wide variety of products, generally finds it economical to maintain a sales organization to reach jobbers, without employing an intermediary, and a few even sell a large part of their outputs direct to the retail trade. One of the largest hardware manufacturers in the United States reaches the larger retailers with his own salesmen, but leaves the smaller ones to jobbers, and in order to make his line more complete and reduce selling expense the salesmen of this company carry a few goods made by other manufacturers.

That such direct sale to retailers is out of the question for the small manufacturer making a single product is obvious. That he might sell direct to the few hundred jobbers is possible; but as a matter of fact, a large number have found it more economical to use a manufacturers' agent. The agent becomes the manufacturers' sales department; he combines the outputs of several manufacturers — from ten to thirty in number — and his salesmen are taking orders for a large variety of hardware goods, rather than a single product, thereby reducing the selling expense per unit of goods sold, and making it possible for goods to reach jobbers at a lower price than if each manufacturer had his own sales organization.

The manufacturers' agent does not handle the same kind of product for two different manufacturers; i. e., he sells saws for one, scissors for another, and so on, and agrees by contract with each manufacturer not to handle similar goods made by a competitor. The manufacturer, on the other hand, agrees to give the agent exclusive sale of his products, sometimes for the whole country, and sometimes for a certain section of the country. In a few cases, the manufacturer sells direct to jobbers in territory near his plant, and uses agents in more remote parts of the country. Several of these manufacturers' agents are located in New York, but they are found in many other large cities. Tho they sell mainly to hardware jobbers and machinery supply houses, they not infrequently sell to the largest retailers, especially department stores.

These houses usually receive their compensation in the form of a commission on sales, varying from 5 to 10 per cent on different articles. One of the largest houses handles some of its accounts on a salary basis; i. e., it is paid a lump sum per year by the factory for disposing of its product, and prefers this method on the ground that the manufacturer is more likely to give his consent to a large order at a special price, than if he had to figure in the commission he would have to pay on such a sale. This house thinks that the best method is a salary on sales up to a certain volume, and a commission on all sales above that amount.

Manufacturers' agents in the hardware trade do practically no financing, tho in a few cases they have financial interest in factories that they represent. Tho they carry a few goods to supply nearby territory, they have but little of the storage function to perform, as goods are usually shipped direct from manufacturer to purchaser. Their main function is selling. They often publish catalogs of the goods they handle, and they send out salesmen just as the manufacturer would have to do if he had his own sales department. There appears to be no pronounced tendency in the hardware trade for the manufacturers' agent to become a less important factor.

As an indication of their present importance in this trade, information was procured from ninety-three hardware jobbers in the United States concerning the extent to which they buy from such intermediaries. Out of these ninety-three, only five concerns reported that they do not buy through manufacturers' agents at all, leaving eighty-eight, or 94.7 per cent of the total, that do purchase through them. Of these eighty-eight, sixty-seven reported that they use them only a little, whereas the remaining twenty-one state that they buy 25 per cent or more. Some of them report that they buy as much as 40 or 50 per cent in this way. As might be expected, it appears that houses in the South and West purchase through these intermediaries more commonly than do those in the East. Inasmuch as it is possible that many of the wholesalers who report that they buy "very little" or only to a "limited extent" in this way, purchase more than their answers indicate, it is clear that a substantial proportion of all hardware — possibly from 15 to 20 per cent — passes through the hands of these intermediaries on its way from manufacturer to wholesaler.

Another interesting feature of the hardware trade is the purchasing agent, who represents the jobber. The assembling function, which is an important one for all jobbers, is simplified for them to a certain extent by the sending out of manufacturers' and agents' salesmen; but there are many products, such as wire, and other articles in which metals predominate, which they can buy to best advantage only if they follow market conditions in the principal trade centers (especially New York) with great care. The average jobber is not in a position to do this efficiently and economically. Furthermore, there are a great many small jobbers, each of whom can use but a relatively small quantity of certain products, and who would be able to buy at lower prices if they could pool their orders and thus get quantity prices.

These are the two principal factors that account for the existence of the purchasing agent in the hardware trade, viz., need of exact and continuous information of trade conditions and price fluctuations, and the ability to buy at lower prices by placing combined orders. Whereas the manufacturers' agent previously described, acts as a specialized selling organization for manufacturers, the purchasing agent acts as a specialized buying organization for jobbers.

There are only four or five important purchasing agents of this nature in the country, but some of these do an extensive business. The largest one, located in New York, represents three hundred hardware jobbers scattered all over the United States and Canada. Tho western, southern, and Canadian jobbers probably need this service the most, yet eastern jobbers, even some located in New York City, are clients of this company. The company works entirely on a salary basis, i. e., a lump-sum-per-year payment. This basis is necessary, because many clients employ the purchasing company principally, or even solely, for the sake of procuring trade information, whereas others buy large quantities of goods through it.

This purchasing company keeps twelve specialists at work studying the market continuously. A loose-leaf catalog of price quotations is published and distributed to clients, and "change" sheets are sent out in large numbers every day. By finding out in advance the needs of its clients, it is able to order enormous quantities of products from manufacturers at one time, occasionally taking the whole season's output of a manufacturer. All concessions received from manufacturers are passed on to clients. The service also includes the picking up and consolidating of small lots of goods, which the distant jobber cannot buy advantageously or have shipped economically without such service. This company deals not only in standard hardware, but in electrical, automobile, plumbing, machinery, and other supply lines. The annual purchases made through the company amount to many millions of dollars.

According to information received from ninety-six hardware jobbers in the United States, eighty report that they use purchasing agents, leaving sixteen that do not use them at all. Of the eighty concerns, fifteen report that they use them only for the market news service described above, rather than for actual buying. Eastern concerns appear to use these intermediaries as much as western and southern concerns, but more largely for information purposes only. The fact that 83.3 per cent of all jobbers reporting use purchasing agents at all, however, indicates that these middlemen must perform a substantial and valuable service.

Purchasing agents of a similar nature are found in other trades, notably in the dry goods trade, where they are known as "resident buyers," a term more frequently applied to buying agents of department stores in New York City. Department stores do not usually buy through jobbers, and therefore have to go to the expense of performing their own assembling function. This is done in four principal ways in New York City, the principal market in which they buy: first, by sending buyers to New York (without any permanent representative in that market); second, by maintaining their own permanent buying offices in New York (an expensive method that can be indulged in by only a few of the largest department stores); third, through coöperative buying syndicates, whereby a number of department stores club together and divide up the expense of maintaining a permanent buying organization in New York; and fourth, by employing an independent resident buyer, who represents a number of stores, provides office space for their buyers when in town, provides sample rooms where goods may be displayed, executes fill-in orders, consolidates, packs, and ships orders to clients, keeps clients posted on market conditions, and who picks up job lots which department stores use for their special mark-down sales. Inasmuch as dry goods jobbers have to buy in New York in much the same way that department stores do, they also frequently use resident buyers.

IV. Manufacturers' Agents in the Grocery Trade

Tho the lines of demarcation between manufacturers' agents and brokers in the grocery trade are rather indistinct in some cases, the former are employed mainly to market "branded specialties," and the latter to market unbranded or staple commodities. The manufacturers' agent usually sells over a much wider territory than the broker, and on the whole he is very similar to the selling agents in the hardware trade, and exists for much the same reasons, i. e., the combining of the outputs of different manufacturers with consequent reduction of selling costs.

The fact that branded staples are commonly sold this way has an important bearing on the matter; many of the well known grocery products were started in a small way, and when national distribution was first sought, the manufacturers themselves could not judge as to the probable success of their advertising campaigns. They also frequently started with but a single product, and they had no business connections. Consequently, they called on manufacturers' agents, who already had sales organizations in operation, and who were in the best situation for reaching the trade. On the other hand, as some of these grocery specialties have become widely used, and hence move in huge quantities, manufacturers have in many cases found that they could afford sales organizations of their own, and have therefore done away with agents. One of the largest manufacturers' agents in the country reports that, all through his history, he has been gradually taking on accounts for newly advertised specialties, only to have his commissions gradually reduced and sometimes to lose the accounts altogether as distribution has become successful and voluminous. This particular agent has also taken on other commodities—especially canned goods—on a brokerage basis, in order to increase and stabilize his business. Another has obtained control of manufacturing plants, so as not to lose important accounts. In other words, manufacturers' agents are of special importance during the early years of building up a distribution for advertised grocery products, and are likely to give way to manufacturers' own sales departments when the distribution has become successful. This constitutes a distinct tendency in the grocery trade.

The statements brought out above are admirably illustrated by the history of the methods employed by the breakfast cereal companies. The Kellogg Toasted Corn Flake Company, for example, at first used manufacturers' agents in different parts of the country in order to reach jobbers. Gradually, as output increased, this company began to develop its own sales organization, and did away with its last agent only a few years ago. In order to do this, it has had to develop a territorial sales organization, with each district in charge of a territorial sales agent (taking the place of the former manufacturers' agent). A stock of goods is kept on hand in each district to care for rush orders. The fact that the Kellogg Company manufactures more than one product, and that it probably figures that it gets better attention to its products through its own salesmen, have undoubtedly been factors in adopting this policy.

Most of the other well known breakfast foods, such as " Shredded Wheat " and " Quaker Oats," are also sold direct to the jobbing trade, but it is said that the Cream of Wheat Company still uses the manufacturers' agent, at least in some parts of the country. When this company began putting up carefully selected and sterilized " farina " or " purified middlings," about the year 1900, and advertising it under the name of " Cream of Wheat," it naturally could not afford a sales organization of its own, especially as the success of the venture must have been highly problematical; and it was only natural that it should have employed agents. A company of this sort naturally balances the cost of a sales organization of its own against the cost of selling through agents, and it changes to direct sale only when it is sure that it can do so more cheaply and more effectively than by employing agents. If it can induce agents to accept smaller commissions, as the volume of business increases, this may at least postpone the development of direct selling.

Manufacturers' agents in the grocery trade handle a large variety of products for manufacturers, including soap, cornstarch, stove polish, shoe polish, condensed milk, malted milk, soft drinks, confectionery, cooking oil, chloride of lime, etc. They have practically no financing function to perform; they carry only small stocks from which emergency orders may be filled. Tho they generally send their salesmen to jobbers only, at least one company was found (in Boston) that sends its salesmen to retailers to take orders, which are booked through jobbers. In other words, this agent performs the service of sending out " specialty men," which is often done by manufacturers of grocery specialties themselves.

Each manufacturers' agent has a specific territory to cover: Boston houses usually cover New England, and New York houses often have territory east of Buffalo and Pittsburgh, and so on. As in the hardware trade, an agent handles each product for only one manufacturer, and has exclusive sale within his territory. The commissions vary all the way from 2 or 3 per cent to 10 per cent, varying for different products, and with the extent to which a substantial distribution has been built up. The reduction of commissions allowed to manufacturers' agents is a good illustration of the power of advertising to reduce selling costs.

V. Brokers in the Grocery Trade

Brokers are of considerable importance in the grocery trade; wholesale grocers, even the largest, buy a very large proportion of their supplies through this class of dealers. Commodities commonly handled by them are sugar, rice, canned goods, flour, dried fruit, coffee, tea, salt, salt fish, syrup, molasses, and other products of minor importance. Brokers handling these products are found in all the large cities of the country. In many cases a single broker handles a number of different products, but in the largest cities there is a high degree of specialization — such as sugar brokers, coffee brokers, canned-goods brokers, etc.

The *true* broker does not make exclusive arrangements with individual manufacturers; in other words, he is a free lance, placing orders that he receives from jobbers with any manufacturer that can offer the best price. As a matter of fact, most of the so-called brokers are tied to certain manufacturers for whom they are sole agents in the cities or territories where they — the brokers — are located. In this respect, such brokers are very similar to manufacturers' agents, and hence it is often difficult to distinguish between the two. The pure type of broker exists to a certain extent, however, as in the sugar trade in New York, and in the form of "merchandise brokers," who are found in all large markets. This latter class does a very miscellaneous sort of business. They sell for distant shippers who send only occasional carloads of products to market; they bring buyer and seller together in the same market, as for example when a wholesale grocer has a surplus amount of sugar or flour which he wishes to dispose of.

In general, brokers exist in the grocery trade for very much the same reasons that the other intermediaries are found between producer and jobber. They represent a number of sellers, and thereby reduce selling costs. The production of many of the commodities that they handle is seasonal, which is another reason why manufacturers cannot afford to keep their own representatives in all large markets of the country. Furthermore, the manufacturers in many of the trades where brokers are important, are small, isolated, and scattered throughout the country. Most brokers sell within a limited territory; they have practically no financing functions; they represent the sellers in most cases, rather than the buyers; they are commonly paid a flat rate per package or per car for their services, and the brokerage usually amounts to from less than 1 to 2 per cent of the selling price; they handle principally unadvertised commodities; and they have to get their prices confirmed by their principals.

A broker in the grocery trade is usually a single individual who does his own work, except for some clerical assistance in his one-room or two-room office, and does not have a force of traveling salesmen as do many of the manufacturers' agents described above. His expenses are low, consisting of office rent, telegraph and telephone, clerical help, sometimes a salesman or two and oftentimes expressage on samples — for sale is largely by sample. He has to be an expert on the commodities that he handles. He goes in person to the wholesale dealers to obtain orders, and is of considerable value to these wholesale buyers by keeping them posted on market conditions, and by saving them the trouble and expense of sending out buyers to scour the country for goods which they want.

There appear to be two leading problems connected with the activities of brokers, viz., the splitting of commissions, and the buying of goods on their own account for speculative purposes. Competition is keen, and in order to land large orders they frequently cut their brokerage fees below the customary rates. In spite of some attempts to do so, they have not been able to govern this matter through associative action. The buying of goods for speculative purposes is not looked on with favor for the simple reason that a broker is not likely to give his best services if he has goods of his own to dispose of in competition with those of his principal. On account of the prevalence of these two practices, some brokers are found in each market who have unsavory reputations in the trade. Absolute honesty and disinterested service are as essential in the broker as in any other form of middleman.

Turning to the milling and flour trade, we find three principal methods used by millers in marketing their flour: first, direct to retail stores through branch offices, a method employed by the large manufacturers of nationally advertised flour which is destined for "family trade"; second, direct to jobbers (wholesale grocers, flour and feed jobbers, and specialized flour jobbers) and large bakers; and third through flour brokers to jobbers and bakers. A flour mill sometimes employs all three methods at the same time, selling branded flour to retail grocers in thickly populated sections of the country, branded flour and good quality unbranded flour to jobbers, and " clear " or lower quality flour through brokers. Advertised brands are not sold through brokers.

Large mills seldom sell their best quality flour through brokers; but small mills, especially those in distant localities, find them practically indispensable for efficient marketing. The output of a small mill varies from year to year; during one year it may be able to market its product in nearby cities, and during the next year it may have to seek wider markets. The quality of flour made by small mills varies from season to season, which results in having to seek different classes of buyers and even different markets from year to year. Different types of flour are made in different parts of the country. Each mill has but one kind of flour to sell, whereas each flour jobber or wholesale grocer needs perhaps five or six different types and grades.

The foregoing facts indicate why it does not pay the small or average sized miller to maintain his own permanent sales force in order to reach the principal markets. The broker not only reduces selling expense by combining the outputs of several mills (usually from five to twenty), but he represents mills which are located in different parts of the country, so that he not only always has flour to sell, but he handles the different types. Formerly, many of these brokers were commission men, and small mills shipped their flour to them on consignment without knowing what price they were to receive. Then they began sending samples from which the commission men would take orders, getting prices confirmed by shipper before sales were consummated. Thus the commission man became a broker.

Flour brokers are expert judges of flour quality. They work over and carefully inspect the samples sent by their principals, and form opinions of the baking quality, etc. Through their knowledge of qualities their services are of great value to the flour buyers of wholesale grocery houses, and they keep these buyers posted on market conditions from day to day. The flour buyer of one of the largest wholesale grocers in Chicago says that he buys about 25 per cent of his flour through brokers; that he can't hope to keep in touch with all the mills from whom he buys flour; and that even if he is trying to buy direct it frequently happens that he can't get the flour that he wants from some particular mill at the time he wants it, and that therefore he has to resort to the brokers to find what he wants. The broker is therefore a great help to the wholesale grocer in his assembling function.

Tho flour brokers sometimes buy flour for speculative purposes; those with the best reputation do not. Even these, however, occasionally take title to a certain amount of flour, first for the purpose of keeping a small stock on hand to fill rush orders, and second, occasionally to help out a small mill that can't afford to wait for its money until its flour is sold. Flour is sold by brokers in car-lots, and the mill both ships and bills direct to the purchaser that the broker has found. Usually the flour broker performs no financing function, but occasionally honors drafts of small mills, rather than keep them waiting for their money. The customary brokerage fee is ten cents a barrel, but this is frequently cut on large orders. Each miller usually employs but one broker in a city, tho some mills sell through any broker who finds a satisfactory sale. The best brokers apparently prefer to be exclusive representatives of their principals in the cities where they are located.

With the growth of large flour mills, and the shutting down of many small ones, the flour broker is probably losing his importance slightly as time goes on. The development of large bakeries, which buy flour in huge quantities, also contributes to this tendency, inasmuch as they prefer to go direct to mills whenever possible. A few flour brokers are turning into specialized flour jobbers, who sell to large retailers and to wholesale grocers and bakers. In other words, instead of handling on a brokerage basis, they are taking title to the goods, tying up their capital, and assuming the merchandising risk of price fluctuation — functions not ordinarily performed by brokers.

The marketing of canned goods illustrates about as well as any trade the usefulness of the broker as a marketing intermediary between manufacturer and jobber. The canning of fresh vegetables and fruits is done principally by a large number of small packers or canneries, scattered all over the country from Maine to California, each depending on a local supply of raw material; the output of each packer is relatively small; the business is intensely seasonal; and both quantity and quality of pack vary from season to season. Furthermore, on account of the variations in crop conditions in different parts of the country during a single season, the market area for a single packer varies accordingly; some years he can sell his output in nearby markets, and other years he can do better by going to more distant markets. It is not difficult to understand that it would be too expensive for each packer to maintain a sales organization which could market its output efficiently to the hundreds of grocery jobbers all over the country, and that he finds the broker a serviceable agent.

In the largest markets brokers are found who handle nothing but canned goods, including canned fish, but in many cases they also handle dried fruits, and to a certain extent a variety of other products. The canned goods broker usually represents a fairly large number of packers, fifty to sixty being a common number, at least in Chicago, and some of them representing over one hundred.[1] The brokers in this trade do some financing, by making advances to packers, tho this practice is apparently not so common as is usually thought. Most packers give exclusive sale to a single broker in each city or territory, but this is not a fixed rule. The usual brokerage fees average about 2½ per cent on canned fruits and vegetables and 5 per cent on canned salmon. Brokers having the best reputation do not buy goods on their own account, except in some cases to have a small supply on hand to fill rush orders.

Canned goods brokers sell almost entirely to wholesale grocers, who on the whole seem to prefer to buy from them, rather than to go direct to packers. When a wholesale grocer in Chicago, for example, is in the market for peas, he can call up from fifteen to twenty brokers who can immediately show him a great quantity of samples, and quote prices (subject to confirmation). This is much cheaper and more expeditious than sending buyers out into the country. There is a slight tendency for very large packers of canned goods to establish their own sales organizations and thus reach the trade direct, such as Burnham and Morrill, Heinz, Beechnut, and the meat packers, etc., but it will be noticed that these companies do not sell perishable fruits and vegetables.

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[1] The data on canned goods brokers are drawn largely from a paper by Mr. D. D. Sells written under the supervision of the author in Chicago during the summer of 1916.

It is more difficult to explain the need of brokers in the refined sugar trade than in the other trades described, inasmuch as the manufacturing business is concentrated into a few large companies, each of which sells in large volume. And yet, outside of Boston and New England, the refiners sell to wholesale grocers and large manufacturers who use sugar, almost entirely through brokers. In many parts of the country, however, these brokers have become so closely allied to the refiners, that they practically constitute their sales organizations, paid on a brokerage rather than on a salary basis. In spite of the fact that there is but a small number of refining companies, one of which is much larger than the others, the fact that brokers combine the output of several plants, goes far to explain their existence, especially as many sugar brokers outside of the very largest markets combine other products such as canned goods and dried fruits with their sugar business.

In New York City, the sugar brokers are of the pure type, i. e., they are not tied in any way to individual refiners. In the trade, New York is called an "open market"; the broker gets an order for a carload of sugar from a wholesale grocer, and he places the order with whichever refiner makes the best price. In contradistinction to this, Chicago is a "closed market"; in other words, each refiner sells through a single broker — giving that broker exclusive territorial rights. Oftentimes such a broker sells no other sugar and no other product than the output of the refiner with which he is tied, and it is under this arrangement that the broker becomes to all intents and purposes the sales representative of the refiner, rather than a broker in the true sense of the term, or than even a manufacturer's agent, who ordinarily handles articles for a number of different manufacturers. In Chicago, for example, the American

Sugar Refining Company has an office of its own which has general supervision of sales in that territory, but all sales are actually made through a "broker" who has his office adjacent to that of the American Company.

On the other hand, some of the refiners have exclusive brokers of this sort in interior cities, but they are allowed to handle — not any other sugar — but other articles such as canned goods. One refiner explained that in that way he was able to command all the time he needed of a $6000 man for $3000 — an admirable illustration of the economies effected by combining the sale of articles made by different manufacturers through one middleman. The brokerage fee in this trade is ten cents per barrel, which amounts to only about one-twentieth of a cent a pound, or considerably less than one per cent of the value.

This trade has many other interesting features. Sugar is marketed from refiner to consumer on perhaps narrower margins than any other commodity, and yet it passes through the hands of a large number of successive middlemen, indicating that functional specialization is not inimical to low marketing cost, and may even be largely responsible for it. In fact, two of the refiners (the Federal and the National) have no sales departments of their own, even for reaching brokers. The Federal, for example, employs a commission house (engaged largely in foreign trade) to attend to its selling, and pays this house on a commission basis. In such a case there are really two middlemen between refiner and wholesale grocer. Furthermore, raw sugar is also handled by a special class of brokers, who sell for the importers to the refiners. The principal reason for this is that the importer does not have a steady supply; he may have five thousand tons today, and no more for a week. The broker, on the other hand, representing a number of importers, always has sugar to sell. One other feature of the sugar trade is the fact that in many of the largest cities there have developed specialized sugar jobbers, who buy through the brokers, and deal in nothing but sugar.

Green coffee is another product that is sold principally through brokers — from the importer through the broker to the coffee roaster (usually the wholesale grocer). Here again, the principal economy is due to the fact that the broker sells for a number of different houses. One or two of the largest coffee importing houses have their own sales organizations with salaried representatives in all large cities, who sell direct to roasters. One large New York house has its own representatives in five of the largest trade centers in the country (including New York) and uses brokers in other cities. It is said that another large New York importer tried to establish his own selling organization in certain large cities, but found it too expensive, and went back to the brokers.

Usually a coffee broker has exclusive sale for his principals in the market where he is located. Tho the importer is his principal, he may be regarded from another point of view as the buying agent of the wholesale grocer, who depends on him for information from day to day, about trade conditions. Prices have to be confirmed by the principal. The customary brokerage fee is fifteen cents a bag of one hundred and thirty-two pounds, which amounts to about one-eighth of a cent a pound, or about 1 per cent of the value. Sometimes the coffee broker also represents a foreign exporting house direct, rather than a domestic importer. Roasted coffee is not sold through brokers.

Tho there are other examples of marketing intermediaries between manufacturer and jobber than those described above, enough has been said to indicate the reasons for the existence of such agencies, and to show that they perform very important services for manufacturers. That they are decreasing in importance in some trades is true, especially in the textile trades where mills are becoming less and less dependent on commission houses for financial support, and in the case of branded and advertised articles, where the manufacturers' agent is losing ground. But even in these trades, marketing intermediaries are bound to continue in existence indefinitely, especially to serve the smaller manufacturers. The middlemen described in this paper admirably illustrate the value of functional specialization in marketing.

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THE USE OF PRIVATE TOKENS FOR MONEY IN THE UNITED STATES

SUMMARY

I. Definition and varieties, 600. — II. Tokens issued prior to 1800, 602. — Foreign, 603. — Home manufacture, 605. — III. Tokens issued from 1800 to 1861, 608. — War of 1812 period, 608. — Jacksonian era, 611. — Gold tokens, 617. — Georgia, 617. — North Carolina, 618. — California, 620. — Miscellaneous, 624. — IV. Tokens issued since 1861, 626. — Civil War period, 626. — Period after Civil War, 634.

I. DEFINITION AND VARIETIES

IN considering the relation of the money of a country to the welfare of the people of that country, frequently too little attention is paid to the so-called details of the currency system, and particularly to the lack of small change. As touching everyday welfare, however, it may be said that the people are almost as much concerned with the supply of their pennies as they are with that of their dollars. It has been for the most part the scarcity of small change which has called into existence private tokens used for money.

The early use of the term " token " was to describe counters or jettons issued by traders to serve as small change. Gradually the term lost some of this primary meaning and came to be used by economists to describe the smaller denominations of money whose bullion value is less than the money value. It is still so used by some writers, but the best modern practice is to apply the term " fiduciary " to this subsidiary money and reserve " token " for its earlier meaning. For the purposes of this discussion, then, the term " token " as applied to money will mean a medium of exchange unauthorized by law and issued by private individuals or concerns, which comes to be recognized as a sort of money and practically serves that purpose.

A general definition must connote, and thus there are left particular questions to be considered more specifically. The line of demarcation, for example, between the issuing of tokens and counterfeiting is by no means always clear. The difficulty is all the more evident when it is remembered that tokens frequently resemble the authorized money of the country, and that counterfeits are not always exactly like the money they seek to imitate. The legal prohibitions of counterfeiting are the most satisfactory criteria for distinguishing between what is counterfeit and what is token. In the United States, at any rate, the law has been very specific in defining what constitutes counterfeiting.[1]

The second problem comes up in the matter of coins issued by private concerns or persons under right of patent from the king, or by authorization of a branch of government acting as if under full sovereign authority. This practice was followed frequently during the colonial period both by residents in England and by the American settlers.[2] It would seem that the practice formerly carried on by the United States of letting out by contract parts of the process of coining money is sufficient justification for excluding money of authorized manufacture, even tho it was issued by private persons. The essential characteristic of tokens as here considered is their unauthorized issue.

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[1] The case of the Igorot copper coins of the Philippine Islands is particularly puzzling. The natives of Lepanto-Bontoc and Nueva Vizcaya used the surface deposits of copper to make round, flat discs which they circulated as money. They came to be used extensively in central and northern Luzon and elsewhere. In one of his orders the Governor-General of the Islands referred to them as counterfeits. So far as they depended for their circulation on their imitation of the legal coins they were counterfeit; but the widespread knowledge of their true origin and nature, coupled with the fact that they were long tolerated, would seem to make them tokens. Cf. E. W. Kemmerer, Second Annual Report of the Chief of the Division of Currency to the Treasurer of the Philippine Islands (1905), 19.

[2] In 1652 George Sanderson and George Hull coined money under contract with the General Court of Massachusetts. Lord Baltimore issued his own coins for use in Maryland. In England William Wood was granted the right by George I to coin money for the "Island Dominions and Territories in America." Cf. S. Crosby, Early Coins of America, and R. Ruding, Annals of the Coinage of Great Britain (3d ed.), 2: 72.

Two classes of tokens are issued: tradesmen's tokens, and political, or general, tokens. Tradesmen's tokens are substitutes for money issued by business firms with the name and place of business of the issuer, and frequently with an advertising legend describing the nature of the issuer's business. The distinguishing features are, that the issuer is known, and that their circulation, certainly at first, is usually confined to trade with the issuing firm. Political, or general, tokens are issued by individuals or firms directly for gain, and are of two kinds. The first variety are usually of one-cent value, and because they are issued without an indication of their source, they tend to circulate more widely than tradesmen's tokens. The term "political" is often applied to them because many of them bear a patriotic legend or an inscription commenting on some aspect of the political situation. Gold tokens, usually coined in \$2.50, \$5, \$10, and \$20 pieces, furnish the second class of general tokens. They do not bear political legends.

II. Tokens Issued Prior to 1800

From the settlement of the American Colonies to the beginning of the nineteenth century the lack of an adequate supply of coins was continually a cause for dissatisfaction. A field so fertile for the utilization of token money could not long remain unworked.[1] The tokens issued during this period may be classified as to origin into: (1) those of foreign origin, and (2) those of home manufacture.

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[1] For an account of the experience of England and Canada under similar circumstances, cf. England: Palgrave's Dictionary of Political Economy, 3: 547; A. E. Outerbridge, Jr., Curiosities of American Coinage (pamphlet), 9, 10; Hunt's Merchants' Magazine, 7 (1842): 273; Chamber's Journal, (vol. xi), chap. 71 (1894): 662–665; Ruding, Annals of the Coinage of Great Britain, passim.; and Bankers' Magazine (N. Y.), 15 (1860): 433–438. Canada: R. W. McLachlan, Presidential Address, in Transactions of the Royal Society of Canada, section 2, serie 3, June, 1915, 9: 51–60.

Tokens of foreign origin. — It appears that all of the imported tokens, with the exception of the "New Yorke Token" and the "New England Stiver," came from Great Britain. The New Yorke half-penny token was probably of Dutch origin. It is placed in the period 1664 to 1710 when New York was spelled with an "e." It was issued apparently to give relief during the period of great scarcity of change from 1700 to 1706, but it probably did not achieve a very wide circulation.[1] The New England stiver is supposed to have originated in Holland to supply small change to Dutch merchants in New Amsterdam during the period of Dutch control (1623–64), and, as in the case of the New Yorke token, its circulation was probably very limited.[2] A law supposedly directed in part against this token was passed by the Council and House of Representatives of Massachusetts, March 21, 1700, providing that in three months all tokens were to be redeemed at the highest rate for which they had passed, and persons continuing to put out tokens were to be fined not exceeding £50, or be imprisoned not exceeding six months.[3]

As early as 1681 English tokens, probably issued at Dublin, were brought to this country by Mark Newby, who led a party of emigrants from Dublin to New Jersey. These halfpence, on account of the scarcity of small change, were made legal tender up to five shillings.[4] The second earliest tokens of English origin were the "Carolina Elephants," probably issued at London in 1694. They are held by some not to have been used in this country as money,[1] but there are grounds for believing that they were so used.[2]

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[1] Historical Magazine, 5 (1861): 294, 295 and Crosby, 345, 346.

[2] Ibid., 347.

[3] Ibid., 114, 115.

[4] Ibid., 135–138.

The other type of tokens manufactured in Great Britain for use in this country were all put into circulation after 1776,[3] and in fact one variety even after the establishment of our mint. They are the Nova Constellatio [4] coppers struck at Birmingham in 1783, 1785, and 1786; [5] the Georgius Triumpho, probably intended to commemorate the success of George Washington, dated 1783;[6] the Bar Cent or U. S. A. coppers, also struck at Birmingham, in 1785; [7] the Auctori Plebis, struck in 1787; [8] the Nova Eboraces, or New York coppers, issued in 1787, probably the private speculation of some English merchant; [9] and two types of Kentucky tokens, 1796, one type issued at Birmingham and the other at Lancaster. Crosby says, "In beauty of design and execution, these tokens are unsurpassed by any piece issued for American circulation."[10] The names given these issues by numismatists come from the designs or legends they bear. The Nova Constellatios carry the legend, NOVA CONSTELLATIO, sometimes on the obverse and sometimes on the reverse. The Bar Cent usually had on the obverse a large, Roman, interlinked U S A, and on the reverse thirteen horizontal bars. Probably the most important of these issues was the Nova Constellatios. Crosby, quoting from Bushnell's *Numismatic Notes*, says: "The Nova Constellatios were made in Birmingham, in England, and the dies were cut by Wyon, of that place. Over forty tons were issued from one die alone, and many more from another. They were manufactured by order of a gentleman of New York, who is believed to have been Gouverneur Morris."[1]

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[1] Crosby, 337, 338.

[2] "Its history and object is unknown, but whether an enterprise of the Lords Proprietors or of individuals, it was doubtless intended for a circulating medium." H. N. Johnson, Western Reserve and Northern Ohio Historical Society, Publications, 2: 69, 70.

[3] The weight of these tokens ranged from 85 to 142 grains.

[4] To be distinguished from the early patterns for United States coinage of the same name. Cf. Crosby, 307, 308.

[5] Ibid., 331–333.

[6] Ibid., 341, 342.

[7] Ibid., 333, 334.

[8] Ibid., 342, 343.

[9] Ibid., 340, 341.

[10] Ibid., 344.

Records have been found of only two instances of tradesmen's tokens of foreign manufacture issued in this country. The first of these were put into circulation by the firm of William and John Mott, 240 Water Street, New York City, in 1789.[2] On the obverse they bore the legend, MOTTS, N. Y., IMPORTERS, DEALERS, MANUFACTURERS, OF GOLD AND SILVER WARES; reverse, CHRONOMETERS, CLOCKS, WATCHES, JEWELRY, SILVERWARE. The firm of William Talbot, William Allum, and James Lee, 241 Pearl Street, New York City, followed suit in 1794 and 1795.[3] These coins, considering their localized source, obtained a circulation of considerable extent.[4]

Tokens of home manufacture. — The reference to the earliest American tokens of home issue is in Felt's *Historical Account of the Massachusetts Currency.* The Massachusetts mint was closed in 1697 "by the hand of Royalty." Felt says: "At this date [1701], there was a scarcity of change. Such an occasion was followed with its usual consequences. Regardless of their irregular example and bent on their own convenience and gain, not a few individuals stamped pieces of brass and tin and palmed them on [the] community at a penny each. They were speedily commanded by the Legislature to withdraw from their course or be fined and imprisoned."[5] It was during this period that the Dutch

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[1] Crosby, 331.

[2] Weight, 108 to 171 grains.

[3] One-cent copper, 153 grains.

[4] C. I. Bushnell, Historical Magazine, 3 (1859): 299–301, and Crosby, 334–336.

[5] J. B. Felt, Historical Account of Massachusetts Currency, 55.

New Yorke token above referred to probably circulated. Virginia furnishes two further examples of tokens of home manufacture. The first were issued in 1714 by Richard Dawson, of Gloucester (county ?), Virginia. They were of one shilling value, and probably of little importance.[1] In 1773 and 1774 many halfpennies, and probably a few pennies,[2] were issued in the same colony. It is presumed that they were not authorized coins, because in 1782, Thomas Jefferson wrote: "In Virginia, coppers have never been in use."[3]

An interesting issue are the Higley, or Granby, tokens, coined from 1737 to 1739 inclusive by John Higley (or Highley), of Granby, Connecticut. It is claimed for the issuer of these tokens that he was the first coiner of copper money in America. It seems that the authorities paid no attention to this issue, and Higley was able to make a comfortable living by his enterprise.[4] It was probably the coins of the earlier years that bore the legend, "The value of three pence," whereas later the inscription was changed to, "Value me as you please." As an explanation of this change the very plausible story is told that Higley was a frequenter of a public house where he paid for his drinks with his own money. His trade became so heavy that objection was raised to accepting longer the tokens at their face value — three pence. Soon afterwards Higley appeared with coppers bearing the words, VALUE ME AS YOU PLEASE — I AM GOOD COPPER.[5]

An issue which gives a good insight into the currency situation just after the Revolution is the Annapolis tokens issued in 1783 by I. Chalmers, a goldsmith of Annapolis, Maryland. The scarcity of change had become so acute that Spanish dollars were being cut into halves, quarters, and eighths. Expert cutters had begun to do a flourishing business by cutting the dollars into five fourths, nine eighths, or ten eighths, deriving a gross profit of from 12½ to 25 per cent. This practice was carried on to such an extent that the people became distrustful of the cut money, and were glad to give the fractional parts of the Spanish dollar for these silver tokens of uniform value. The Chalmers coins were issued in at least three denominations — shillings, sixpence, and threepence.[1]

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[1] Crosby, 323.

[2] Weight, 131 grains.

[3] Ibid., 338–340.

[4] In the latter part of 1739 it appears that Higley, feeling that his private coinage was not safe because not sanctioned by law, was connected with the attempt of John Read to get authority to set up a mint. Ibid., 206, 207.

[5] H. N. Johnson, Western Reserve and Northern Ohio Historical Society, Publications, 2 (1879): 70. Crosby, 324–327.

After the Revolution and before the beginning of the nineteenth century, a few other silver and many copper coins were issued both by states and by individuals.[2] This practice was followed to such an extent that laws were passed by Pennsylvania, Connecticut, and New Jersey prohibiting in general the circulation of coins not expressly authorized.[3] The New Jersey law was passed partly to protect the right of issue granted Thomas Goadsby (Goodsby), Albion (Albian) Cox, and Walter Mould.[4] Pennsylvania's law declared: "Whereas, Divers ill-disposed persons have manufactured or imported into this State quantities of base metal, in the similitude of British half-pence, to the great depreciation of that coin, to the injury of the community in general and the poor in particular such practices having a natural tendency to raise the necessarys of life and introduce new confusion into the currency of the Country," all public officers were prohibited from receiving such money in payment of taxes or other public dues, and the faithful inhabitants of the state were asked to refuse to accept it. The officers were ordered to make inquiry for such persons " that they may be brought to speedy and condign punishment." [1] The British halfpence referred to in this law were made at Birmingham, and sent by the thousand to this country. They were of base metal and lighter than the authorized British halfpence. " We are told that no packet arrives from England without some hundred weight of base halfpence." [2] The trouble continued up to the establishment of the United States Mint.

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[1] Crosby, 328–330; Bankers' Magazine (N. Y.), 6 (1851–1852): 448, and referred to in Hunt's Merchants' Magazine, 46 (1862): 592, as of 1838, but evidently a misprint.

[2] Outerbridge, 5; Hunt's, 20 (1849): 200 and 46 (1862): 247.

[3] Crosby, 171–174, 219, 220, 281, 282, and 294, 295.

[4] Bankers' Magazine, 10 (1855): 316 and 16 (1861): 254.

III. Tokens Issued from 1800 to 1861

The statement has been made that after the tokens issued by Mott, and by Talbot, Allum, and Lee, no more tradesmen's tokens were issued until 1825,[3] but the facts during the period of the War of 1812, and subsequently, do not seem to bear out this statement.

War of 1812 tokens. — Up to the year 1812 very little money had been coined at the United States Mint,[4] and much of this had been exported while yet new and full-weight. The money remaining to serve for small trade consisted of worn joes, doubloons, guineas, and other foreign coins. The situation soon became acute. At the opening of the war, the New England ports were the only ports of egress, and New England manufacturers were supplying the remainder of the country. The movement of the money, then, was from the South and West to New England. With practically all our exports shut off, we were forced to pay for our imports in specie. Partly to save the coin for that purpose, specie payments were suspended in 1814.[1] Soon afterwards the Spanish joe was selling at a premium of 9 per cent on the Atlantic seaboard, and the United States dollar was selling at a premium of 6 per cent.[2] In a letter dated October 17, 1814, the Secretary of the Treasury wrote to the Chairman of the Ways and Means Committee: "It may in general be affirmed — that there exists at this time no adequate circulating medium common to the citizens of the United States. The moneyed transactions of private life are at a stand; and the fiscal operations of government labor with extreme inconvenience."[3] By 1815 the premium on specie had gone to 12 and 14 per cent.[4] The Director of the Mint in his report for the calendar year 1815 said small silver coins had almost totally disappeared.[5] McMaster describes the situation:

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[1] For the law, see Crosby, 172.

[2] American State Papers, 7: 101.

[3] W. C. Prime, Coins, Medals, and Seals, 106. It is quite possible that Prime was referring to tokens in a narrower meaning of the term, excluding paper tokens. The tokens referred to as issued in 1825 were a few struck in commemoration of the completion of the Erie canal, and are without particular significance.

[4] The total gold and silver amounted to a little over ten million dollars. The small change (25, 10, and 5 cent pieces) constituted a very small portion of this, — less than one-half million dollars. J. R. Snowden, Mint Manual of Coins of All Nations, table facing page 128.

> Locking up the coin by the banks bore heavily not only on the Treasury Department and the public creditors, but on the great body of the people as well. It stripped the country of small change; not a sixpence, not a shilling, not a pistareen, was anywhere to be seen in the region of the suspending banks. As no financial institution could, at that time, legally issue bills of a lower denomination than one dollar, the place of the silver pieces had to be supplied by an illegal issue of small paper bills. — Merchants, tradesmen, manufacturers, stage-owners, tavern-keepers, ferrymen, and unchartered banks followed, and before spring came the whole seaboard south of New England was flooded with paper money of the worst description.[6]

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[1] Niles' Register, 7 (1814): 10.

[2] J. B. McMaster, History of the People of the United States, 4: 296.

[3] Niles' Register, 7 (1814): 104.

[4] Ibid., 9 (1815): 3.

[5] Ibid., 9 (1816): 358.

[6] McMaster, 4: 297, 298.

The paper tokens thus issued usually took a form somewhat as follows:[1]

SIX-AND-A-QUARTER CENTS

A GENERAL ASSORTMENT OF GROCERIES

6¼ cts. | Chest of Tea and hogshead | No. 233

I promise to pay the bearer on demand, in groceries, or Philadelphia bank-notes, at No. 130 North Water Street, six-and-a-quarter cents.

JOHN THOMPSON

Phila., December 10, 1814.

SIXTEEN FOR ONE DOLLAR

This money in paper form was likely to tear and wear out easily, and thus it was less likely than metal tokens to be presented for redemption.[2] It also possessed for the issuers the virtue of inexpensiveness. With the passing of the emergency which called forth this paper money, the states began to take steps to get rid of it. South Carolina passed a law providing that all such paper money should be void after May 1, 1817. North Carolina prohibited the issue of bills, orders, tickets etc., by individuals and corporations to be used as small change. Virginia, New York, Pennsylvania, and Maryland at the same time were dealing with similar problems.[3]

By the latter part of 1817 the stringency was practically over. Specie payments had been renewed, and the mint was turning out an increasingly large supply of fractional money. By the middle of November copper cents were available at the mint "to any moderate amount."[4] The Director of the Mint in his report for the calendar year 1820 said the supply of copper coins had increased far beyond the public demand.[1] That the shortage had not been entirely met by 1820, however, is shown by the report of the Secretary of the Treasury for that year.[2] He said that in Philadelphia there was probably an abundant supply of small change, but that in Washington tickets issued by corporations and dollar bills torn in two furnished the bulk of the change. As late as 1820 it was said that " rags ' filthy dowlass,' will soon be in request again; for there is a real scarcity of change, or of anything that passes for money, under bank notes for five dollars."[3] These conditions were being rapidly alleviated by the coinage of fractional money, and the next real period of tokens may be described as the Jacksonian era.

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[1] McMaster, 4: 298. For a full discussion of the disordered currency of the period, see ibid., chap. 30.

[2] R. P. Falkner, Political Science Quarterly, 16 (1901): 316, 317.

[3] McMaster, 4: 302–307.

[4] Niles' Register, 13 (1817): 192.

Tokens of the Jacksonian era. — Conditions leading up to the issue of these tokens were essentially similar to those preceeding the War of 1912 period. In general up to the time of the laws of 1834 and 1837, the pressure for the export of coin from the United States fell largely upon gold because of the under valuation of that metal. Conditions were now changed. In New York City in 1834 silver fifty-cent pieces were selling at a premium of 1 per cent for export.[4] By August this premium had reached 8⅛ per cent.[5] In May, 1837, the majority of the banks suspended specie payments, and the country was facing an actual shortage of available money for carrying on its business.[6] To relieve the stringency caused by this inadequate supply of change, tokens again made their appearance. As many as 164 varieties of this period are recorded. Of these 71 are general tokens, and 93 are tradesmen's tokens.

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[1] Niles' Register, 19 (1821): 430.

[2] Ibid., 18 (1820): 42, 43.

[3] Ibid., 22 (1822): 34.

[4] Ibid., 47 (1834): 147 and 48 (1835): 74.

[5] Ibid., 52 (1837): 369.

[6] " There is an *awful* pressure for money, in most of the cities. The shavers exact their pound of flesh." Ibid., 50 (May, 1836): 185.

The coinage of silver for the quarter ending June 30, 1836, was $1,235,000, and only $77 of this was in small change. Ibid., 50 (1836): 379.

The legends and designs on the general tokens furnish a good commentary on the political and social conditions of the period. They refer to the Second United States Bank, the suspension of specie payments, Benton's "mint drops," slavery, etc. In New England these tokens were called "Bungtown Coppers," in New York "Shinplasters," and in New Jersey "Horseheads."[1] One coin dated 1834 is particularly striking. On the obverse it has the gaunt figure of President Jackson with a sword in one hand and a money bag in the other. The legend reads, A PLAIN SYSTEM, VOID OF POMP. The reverse bears the emblem of a stubborn jackass, branded on the haunches with the letters LL.D., an allusion to the degree conferred upon Jackson by Harvard University. The emblem bears over it, ROMAN FIRMNESS, and around the edges are Jackson's well-known words, THE CONSTITUTION AS I UNDERSTAND IT. Another token bears on the obverse, MY SUBSTITUTE FOR THE UNITED STATES BANK. On a bust of Jackson is, MY and below, the words, EXPERIMENT / MY / CURRENCY / MY / GLORY. On the reverse appears, PERISH CREDIT. PERISH COMMERCE, and a boar, running, with MY / THIRD HEAT written on his side; above, MY / VICTORY, below, DOWN WITH THE / BANK. Date, 1834. An interesting type, because it indicates the sentiment already forming at that time against slavery, bears on the obverse a slave woman in chains, kneeling, and the legend, AM I NOT A WOMAN AND A SISTER. On the reverse the inscription is, UNITED STATES OF AMERICA, and within an olive wreath, LIBERTY / 1838.[2]

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[1] Prime, Coins, Medals, and Seals, 108.

[2] For further types, see Catalogue of Coins, Tokens, and Medals, 1914, 118, 119.

Many of these tokens were issued by individuals, but that some concerns made it a business to coin them is indicated by the following extract:

> These tokens were issued from the Waterbury, Conn., button factory, of the Scovilles, chiefly, if not entirely, as we are informed, and in large quantities. They passed as currency, being of good metal and weight, and though of insignificant nominal value as compared with the bank bills of the day, they are yet occasionally found in circulation [1879], while the bills exist only as curiosities in albums, or are laid away in some corner as reminders of days when bank note values, like Jonah's gourd, shrank out of existence, often even in a night.[1]

In Baltimore these general tokens were advertised in the newspapers by commission houses. They were retailed to all comers, usually in bushel lots at fifty to sixty-two and one-half cents per hundred.[2] As a result of these wholesale dealings the solicitor of the Treasury directed the United States attorney at Baltimore to institute legal proceedings under the law of May 8, 1792.[3]

More numerous as types, but probably not more numerous in total output, were the tradesmen's tokens.[4] Sometimes, in addition to the ordinary legends, they bore trite sayings, as "By trade we prosper" and "Time is money." These tokens were made usually of copper and brass, but sometimes from tin, lead, German silver, or silver; and in value they were predominantly one cent,[1] but some were three, five, and six cents. They were seldom dated. The states from which issues were in existence as late as 1858, with the number of issues, are: New York 126 (at least 107 of these in New York City), Pennsylvania 19, Massachusetts 12, Connecticut 5, Louisiana 5, Virginia 4, Illinois 4, New Hampshire 3, Rhode Island 3, Maryland 3, Michigan 3, New Jersey 2, South Carolina 2, Georgia 1, Mississippi 1, and Ohio 1.[2]

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[1] H. N. Johnson, Western Reserve and Northern Ohio Historical Society, Proceedings, 2: 73. For a description of one type of their issue, see Catalogue of Coins, etc., p. 119.

[2] Quoted from the New York Journal of Commerce, in Niles' Register, 53 (1837): 194.

[3] This law declared that "no copper coins or pieces whatsoever, except the said cents and half cents, being those coined at the mint of the United States, shall pass current as money, or shall be paid, or offered to be paid, or received in payment, for any debt, demand, claim, matter, or thing whatsoever; and all copper coins or pieces, except the said cents and half cents, which shall be paid, [etc.], shall be forfeited; and any person by whom any of them shall have been so paid, [etc.], shall also forfeit the sum of ten dollars . . ." Joseph Story, Laws of United States (2d ed.), 1: 266.

[4] For a description of several types of these tokens, see Catalogue of Coins, etc., 120, 121.

As the government output of small change increased,[3] and with the return of normal times, the circulation of these tokens, both tradesmen's and general, fell off. In the decade following the close of the Jacksonian era, 1840–1850, the issue of tokens was apparently very sporadic — for instance, 1846 in South Carolina, 1847 and 1849 in California, and 1850 in Wisconsin. Scattered examples of this sort cannot be taken as evidence of an insufficient currency, but rather as an indication of local conditions or the peculiar circumstances of the issuer.

Tokens issued after the California gold discoveries. — Of all periods so far discussed it seems that the period 1850–1853 ought to have been most prolific in tokens. Indications are not wanting that a large supply was put out, but definite evidence is very scarce. As previously indicated, the coinage law of 1834 by making the coinage ratio between silver and gold approximately 16 to 1 put a premium on silver, but this premium did not

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[1] Most of these tokens were size 18 (that is, 18/16 of an inch in diameter), — the size of the copper cent of that time.

[2] C. I. Bushnell, Tradesmen's Cards, Political Tokens, etc., 13–74.

[3] Mint coinage of copper cents:

1836	2,111,000
1837	5,558,300
1838	6,370,200
1839	3,128,661

Snowden, Mint Manual, facing page 128.

During May, 1838, 2,229,500 small change pieces were coined, and the mint was still busily engaged on account of the strong demand. Niles' Register, 54 (1838): 258, 259.

become of very great significance until the discovery of gold in California. The change was probably further intensified by the substitution of silver for gold in Holland.[1] The banks then found it profitable to substitute gold for silver in their reserves, and export the silver. As the premium on silver rose, the silver coins, even down to the smallest denominations, were to a certain extent driven out of circulation and out of the country. Late in 1850 or in January, 1851, the postmaster of New York City wrote to the director of the Philadelphia mint asking for a supply of gold dollars to be used as change.[2] By February of the same year brokers in Philadelphia were advertising to purchase silver coin at a premium.[3] S. D. Ingham, a former secretary of the treasury, wrote:

> We have now approached a crisis, in which, by reason of the overvaluation of gold in the coins and the increased production of gold in California, it has so depreciated, in proportion to silver, that the latter commands a premium of three per cent, and is rapidly being withdrawn from the banks and public treasury for exportation, and a few months will probably leave nothing for the small payments and exchanges, except some light foreign coins, and their companions paper tokens, or tickets to be issued by every one who pleases.[4]

In his report for the fiscal year ending June 30, 1852,[5] the Secretary of the Treasury pointed out the fact that the continuing production of gold had driven out of circulation all full-weight silver, and that nothing remained as change except worn pieces of Spanish coinage, many of them reduced in weight 10 or 20 per cent of their nominal value. Specific examples of the scarcity of change are furnished by one Lowell manufacturing company which spent $30 per month as premium on small change with which to pay off its employees, and by two railroad companies which paid a premium of $60 and $80 per month for small change to be used in their depot in Boston and on their roads. All railroads had to count as part of their operating expenses the premium to be paid for change.[1] The relief came from two sources: first, the issue of small denomination bank-notes, and second, the issue of tokens. After referring to these new banks which had sprung up to meet the current need and at the same time to fatten the pocket-books of the incorporators, an article in the February, 1853, number of *Hunt's Merchants' Magazine* says:

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[1] Quoted from the London Times, Nov. 26, 1850, in Bankers' Magazine, 5 (1850, 1851): 677.

[2] Hunt's, 24 (1851): 245, 246.

[3] Ibid., 266.

[4] Quoted from article entitled, "Observations on the Currency of the United States," Ibid., 25 (1851): 290.

[5] Finance Report, 1851, 1852, 11.

> Under the shadow of these new banks, a large batch of private shinplasters have been issued to the amount of between one and two millions of dollars, which at present find a ready circulation throughout the interior. . . .
>
> Nearer the Atlantic coast, fractional bills have been issued by individuals and firms doing business which requires a large amount of small change, for the purpose of supplying the want of silver coin. . . . They are . . . illegal, and their currency should be discountenanced.[2]

The agitation of the authorities acquainted with the needs of the currency system, reënforced by this scarcity of change, led to the passage of the law of 1853, which provided for a light-weight fractional silver coinage.[3] The enormous increase in the coinage of silver[4] gives every reason for crediting the statement published in the Philadelphia papers early in 1854 that the United States Mint had fully met the complaint of a lack of change.[5]

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[1] Secretaries of the Treasury and others continually pointed out that the crux of the whole matter lay in the issuing of full-weight subsidiary coins. Cf. Hunt's, 25 (1851): 290 and Finance Report, 1851, 1852, 11.

[2] Hunt's, 28 (1853): 211.

[3] The act reduced the standard content of the fifty-cent pieces from 206.25 to 192 grains, and that of the other smaller silver coins proportionately.

[4] Coinage:

Year	Halves	Quarters	Dimes	Half-dimes
1852	77,130	177,060	1,535,500	1,000,500
1853	3,532,708	15,254,220	12,173,010	13,345,020

Snowden, Mint Manual, facing page 128.

[5] Hunt's, 30 (1854): 224.

They pointed out that there was lying in the mint then, subject to the call of any who desired it, over a million dollars in silver coin. The enactment of the law of 1853 provided relief for the last noteworthy scarcity of subsidiary money prior to the Civil War period.

Gold Tokens. — The issue of gold tokens presents a case different from the issue of copper and other small-value tokens in that, with one possible exception, the gold tokens were not made to supply the people with small change. The situation is parallel in that the demand, or at least the pretext, for issuing these tokens came from the failure of the government to provide adequate assaying and coining facilities. The coinage was not widespread at any one time, but was localized and limited in duration both by the production of gold in the particular neighborhood and by the tardiness of the government in providing accessible mints. Because of the cost of setting up a mint and because of the reputation for integrity that had to be built up by private mints, a very few establishments at best could engage in the work.[1]

Georgia. — The first coins of this type were minted by Templeton Reid, in Georgia, in 1830. He established his mint in Lumpkin county, near the gold mines,[2] and turned out $10, $5, and $2.50 coins. By weight one test of these coins at the United States Mint gave respectively 251, 123.3, and 60 grains.[3] An assay made in 1842, however, gave the weight of a $10 piece as 248 grains, 942 / 1000 fine, and the value $10.06.[4] Just how long Reid continued to coin the Georgia gold is not certain, because all of the coins are dated 1830. It is known, however, that he was doing business in California in 1849.

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[1] Many of the facts in the following sections on gold tokens are contained in an article by the writer in the South Atlantic Quarterly, April, 1917.

[2] Catalogue of Coins, etc., 20.

[3] Ibid., 109. U. S. gold coins at that time weighed (standard weight) 270, 135, and 67.5 grains respectively.

[4] Outerbridge, 11.

North Carolina. — In 1831, only one year after Reid began coining, a better known and more prolific mint was set up at Rutherfordton, North Carolina, by Christopher Bechtler. He was a German immigrant from the Grand Duchy of Baden where he had been a gun-maker and goldsmith. G. W. Featherstonbaugh in *A Canoe Voyage up the Minnay Sotor*, published in London, 1847, tells how he was impressed with Bechtler's honesty in making his coins the same value as the coins of the United States.[1] The mint was in the hands of Christopher Bechtler from 1831 to 1842, and then it passed to his son Augustus. By that time, however, its usefulness had been impaired by the establishment of the United States Mint at Charlotte in 1838.

When Bechtler started coining, he issued $1, $2.50, and $5 gold pieces without date, and it was not until 1834 that the date appears on his coins. Afterwards, all his coins appeared as of that date. From 1834 on, the tokens were turned out in three weights, depending on their fineness, as follows:

20 carats	$5	to weigh	140 grains
21 "	5	" "	134 "
22 "	5	" "	128 "

To designate these different degrees of fineness, the number of carats was frequently indicated by numerals on the coins, and in addition the practice was sometimes followed of putting on the reverse of the 20 carat coins, "North Carolina gold"; of the 21 carat coins, "Carolina gold," and of the 22 carat coins, "Georgia gold."[2]

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[1] Thomas Featherstonbaugh, in Publications of Southern History Association, 1906, 67-77.

[2] Catalogue of Coins, etc., 109 and Featherstonbaugh, 67-77.

This designation does not appear to have had anything to do with the source of the gold, since all the ore probably came from the same place. In addition to the marks just mentioned, Bechtler stamped on his coins his name and place of business, value, date (after 1834), fineness, and weight.

One test of this coinage indicated an irregularity in the fineness amounting to a loss of about 2½ per cent.[1] Another test gave an average deficiency in weight from the amount stated on the coin of 4.7 grains,[2] but variations in the fineness may have helped make up for the deficiency. Fortunately, there is a definite and apparently reliable statement of the amount of money coined up to 1840. During this period Bechtler states he coined $2,241,840.50. The total bullion from the North Carolina mines from the first mint record in 1804 to December 31, 1839, is put at $10,000,000; so that Bechtler handled approximately one-fourth of the total output.[3] *Hunt's Merchants' Magazine*, 1844, says: "The community having a just confidence in the purity of the metal, much of it is carried by travellers, emigrants, traders and others, into Kentucky, Tennessee and elsewhere . . . . Much of it is believed to be still extant among the farmers, not only in Tennessee and Kentucky, but North Carolina, laid up, with prudent foresight, for future use."[4]

The question of the justification of these enterprises is raised by John Landis, formerly superintendent of the mint at Philadelphia, when he says: "There can hardly have been any reason of necessity for either of these enterprises, since neither community was beyond the reach of assay offices where gold could have been disposed of."[1] That the private mints were serving an actual need, however, is indicated by the introduction of a bill in 1831 to establish assay offices in the gold regions of North Carolina, South Carolina, and Georgia.[2] Nothing was done, as a matter of fact, until in 1838 the United States mints at Dahlonega, Georgia, and Charlotte, North Carolina, began operations limited to the coinage of gold. Moreover, the Director of the Mint in his report for 1841, in speaking of these Georgia and North Carolina tokens, said: "The coins thus fabricated are below the nominal value marked upon them; yet they circulate freely at this value, and therefore it must be more advantageous to the miner to carry his bullion to the private than the public mints."[3]

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[1] Featherstonbaugh, 67–77.

[2] Catalogue of Coins, etc., 109, 110.

[3] Hunt's, 11 (1844): 64 and Featherstonbaugh, 67–77.

[4] Hunt's, 11: 64.

California. — In California the same process which was carried out earlier in Georgia and North Carolina was repeated on a much larger scale. Gold was discovered far from assay offices and government mints. Transportation was slow, uncertain, and expensive. The people needed money. Pressure was brought to bear to have a mint established, but Congress was slow, and private mints sprang up as much to supply the people with what they demanded as to fatten the coffers of their owners. Because these private tokens did fill a positive need, the California law passed to prohibit their circulation and to close the places of issue was repealed.[4] The various establishments rendered this service with varying degrees of honesty.

At first gold dust and nuggets, weighed and marked with the value of the contents, served for money. There was no great need for small change because of the relative abundance of Mexican silver coins.[5] To supply the need for larger coins no less than fourteen private mints were established in a very short time.[1] For the most part the issues were in denominations of $10 and $5, tho a few $50 and $20 pieces were coined. The general style of these coins was the same. They bore the name of the issuer, the value, and some sort of a design — usually the bust of Liberty, the figure of an eagle, or occasionally of some animal. The following table indicates the weights and sizes of the coins issued:

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[1] Catalogue of Coins, etc., 20.

[3] Hunt's, 4 (1840): 383.

[2] Niles' Register, 41 (1831): 300.

[4] Horace White, Money and Banking (5th ed.), 8.

[5] Guide to the Numismatic Collection of the United States Mint, at Philadelphia, 1913, 66.

Coin	Weight	Size[2]
$ 5	115.2 to 132.5 grains	14 to 15
10	129.2 " 263.8 "	13 " 18
20	515.7 " 523.7 "	21 " 22
50	1,287.5 " 1,320.0 "	26 " 28

The fluctuation in weight was due in part to the variation in fineness, but the value was not uniform.[3]

Absolutely, the amount of gold coined by these companies was large, but they handled a smaller percentage of the output than Bechtler did of the North Carolina production. It was estimated in June, 1852, that there was circulating in the form of gold dust or California private coin $20 for each of the 212,000 population, or

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[1] They were: Baldwin and Co.; Cincinnati Mining and Trading Co.; Augustus Humbert; Kellogg and Co.; Massachusetts and California Mining Co.; Miner's Bank (Wright and Haight); Moffat and Co.; Norris, Grieg, and Norris; Pacific Mining Co.; Templeton Reid; Wass, Molitor and Co.; Dubosq and Co.; Shults and Co. — all of San Francisco, and J. S. Ormsby, of Sacramento. Catalogue of Coins, etc., 110–114 and Bankers' Magazine, 6 (1851–52): 181, 182.

[2] Size in sixteenths of an inch diameter.

[3] This lack of uniformity is evidenced by the following mint test:

Coin	Values
$10	$9.37, $9.75, $7.86, $9.70, and $9.977
5	4.83, 4.89, 4.48, 4.92, 4.95, and 4.955

The $9.977 gold coin of $10 was issued by Moffat and Co. An earlier test, made in 1849, at the New Orleans Mint, showed practically the same results. Commenting on that test, the assayer said: "As . . . these coins appear to be made of California gold, unchanged, except in melting, and being cast into ingots, we may expect the title to vary as much as that of the gold in different localities, the range of which is from 860 to 910 milliemes. Hence no surprise should exist at a difference of title rendered in the same mint, or of the titles as compared with those of other mints." Hunt, 22 (1850), 226, 227.

a total of $4,240,000.[1] For the whole period ending January 1, 1854, it was estimated that $260,000,000 in gold had been produced. "More than $60,000,000 have been coined in this city [San Francisco], but a large amount of it has been recoined at the United States Mints. The only private coining establishment now in operation here is that of Kellogg and Richter, which is doing a very heavy business."[2] The California coins bear the dates: 1849 to 1853 — the greater number in 1849 and 1850.

An interesting feature of the coinage is the gold half- and quarter-dollars bearing dates ranging from 1852 to 1880.[3] It is thought by some that these small pieces were intended for souvenirs rather than for circulation. The extended period of their issue, long after an abundany supply of small change was available, seems to support this view. It is true, however, that because at first $50 was the lowest value ingot stamped at the United States assay office in San Francisco, there came to be a shortage of small denomination money. Mexican dollars sold at a premium in December, 1851, of from 1 to 2 per cent, and the banking houses charged at the same time a 2 per cent premium for small gold pieces of American coinage.[4] This need may have been supplied in part by these small coins. The Director of the Mint in 1871 said "no doubt these coins have been imposed upon ignorant persons as real money."[5] Their use was probably very limited.

The United States government responded to the demand for better coinage facilities in 1851 by contracting with Moffat and Company of San Francisco, for the assay and coinage of pieces or "slugs." The smallest denomination was to be $50, and $100 and $200 pieces were to be issued with the same stamp. They were by law coins of the United States and full legal tender. Ingots over $200 in value might be stamped, but they were to be in the form of bars.[1] This assay coinage did not help the currency situation much, because the issue was limited to pieces of $50 and over. In the early part of 1852 the contract was transferred to Curtis, Perry, and Ward, and they were authorized to issue $10 ingots.[2] The need was for a mint to turn out the regular denomination gold coins, and the inconvenience and confusion caused by the government's tardiness in establishing such a mint is indicated by the following extract from the *Alta California*, of San Francisco, 1851:[3]

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[1] Hunt's, 27 (1852): 474.

[2] Ibid., 33 (1855): 353.

[3] Catalogue of Coins, etc., 114, 115.

[4] Hunt's, 25 (1851): 743.

[5] Finance Report, 1871, 432.

> The present difficulties in the way of trade, consequent upon the issue of irresponsible coin, results naturally from the failure of congress to provide us with a mint; in the absence of which these spurious imitations have flooded the channels of trade, until they have become water-logged, have sunk, and are now like snags, knocking out the bottom of commerce, and business generally. The bankers, who especially aided in getting this coin in circulation, by which they, of course, made pretty fair percentage, have determined to decry it, and thus make another good percentage, by purchasing it when the panic shall have depressed it below its real value. The merchants also have repudiated it. This movement of theirs would have been much better had they taken it long ago.

In the same connection, *Hunt's Merchants' Magazine* says: "The want of a mint has cost the miners $18,000,000, which has been the profit of speculaters (sic), through the neglect of the government to provide a mint accessible to all."[4] This failure was remedied by the passing of an act, July, 1852, to establish a mint at San Francisco. The mint was not ready for operation until early in 1854.[5]

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[1] Hunt's, 24 (1851): 743, 744.

[2] Bankers' Magazine, 6 (1851–52): 1008.

[3] Hunt's, 25 (1851): 236.

[4] Ibid., 24 (1851): 462.

[5] Bankers' Magazine, 8 (1854): 789.

Miscellaneous. — In 1842 the Orange Exchange Company, Oregon City, Oregon, put out some $10 and $5 gold pieces, sizes 17 and 14, and by weight 262 and 129.5 grains respectively.[1] At one test the bullion value of a $5 specimen proved to be $4.82.[2] A rather interesting private issue was the so-called "Coinage of the Mormons," struck in Utah in 1849 and 1860. The denominations coined were $20, $10, $5, and $2.50. The design of a $20 piece of 1849 is typical. On the obverse it bore the legend, HOLINESS TO THE LORD, and on the reverse the letters, G. S. L. C. P. G.[3] The $10 pieces ranged in value from $8.50 to $8.70.[4] One test of $20 pieces gave an average value of $17.225. "If this assay at the mint be a fair test of the value of the whole of the Great Salt Lake manufacture of coin — the Mormons seem to know what they are about, and to be determined to make the best of their gold mines."[5] In 1860 and 1861 there were three concerns coining gold in Colorado, in denominations of $10, $5, and $2.50.[6] This coinage was issued in considerable quantities and was current in the Far West. It was of a pale color, more highly alloyed by the natural silver in it than the United States gold coins, but this deficiency was made up in part by the increased weight.[7] In value the $10 issues of Clark, Gruber and Company, counting the silver in them, varied from a few cents above to a few cents below $10. Other issues did not test out so well.[8]

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[1] Catalogue of Coins, etc., 115.

[2] Snowden, Mint Manual, 125.

[3] Catalogue of Coins, etc., 117. The letters stand for Great Salt Lake City Pure Gold.

[4] Snowden, Mint Manual, 128.

[5] Bankers' Magazine, 4 (1849–50): 669.

[6] Clark, Gruber and Co. and J. J. Conway, of Denver, and John Parson and Co., Tarryall Mines. Catalogue of Coins, etc., 116, 117.

[7]

Coin	Weight in grains	Coin	Weight in grains
$20	568.0	$5	120.8 to 133.8
10	260 to 275.7	2.50	68.5 to 74.0

Catalogue of Coins, etc., 116–117.

The corresponding United States gold coins weighed 516, 258, 129, and 64.5 grains.

[8] Hunt's, 48 (1863): 388.

The desire for this coinage ceased with the establishment of the United States Mint at Denver, September, 1863. A peculiar gold coin in half-dollar denomination was issued in 1871 at Leavenworth, Kansas. On the reverse it bore the inscription, HALF DOLLAR CAL., probably in imitation of the bona fide California coin of the same denomination. The weight of one specimen tested was 7.6 grains, 520/1000 fine, value 17 cents. The case was taken up by the authorities of the district under the act passed June 8, 1864, — the first act passed to prohibit the issue of gold coins by individuals, regardless of any intention to imitate the coins of the United States.[1]

This private coinage of gold, carried on at different periods in seven states and territories, constitutes an anomalous chapter in the history of our coinage.[2] In 1851 fifteen private mints were represented in the twenty-seven different kinds of gold coins assayed at the Philadelphia Mint.[3] Ten years earlier the Director of the Mint had expressed surprise that " the privilege of coining copper should be carefully confined by law to the general government; while that of coinage gold and silver, tho withheld from the states, is freely permitted to individuals, with the single restriction that they must not imitate the coinage established by law." [4] Naturally the people patronized these private establishments, since in 1849 and early 1850 the minimum period between depositing the bullion and receiving the coin at the government mint in Philadelphia was sixty days. Bullion deposited prior to December, 1849, was paid out in coin the middle of the following February. This situation had been materially bettered, however, before the end of 1851, and the usual time elapsing between the deposit of bullion and the beginning of the payment of the coins had been reduced to forty-eight hours.[1]

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[1] Finance Report, 1871, 432.

[2] " The issue of such coins is not illegal, and under existing circumstances may be salutary, or even dictated by necessity."

Quoted from, New Varieties of Gold and Silver Coins, Counterfeit Coins, and Bullion: With Mint Values, by Jacob R. Eckfeldt and William E. Dubois, in Bankers' Magazine, 5(1850–51): 200.

[3] Outerbridge, 9.

[4] Quoted in Hunt's, 4 (1841): 383.

IV. Tokens Issued Since 1861

During the year 1860 the bullion value of two half-dollars ranged from 96.65 to 98.43 cents in gold; so when the depreciation of paper passed beyond 3 per cent, there was a tendency for silver to disappear from circulation. The disturbances attendant upon the Civil War period soon brought about a depreciation of paper which exceeded 3 per cent. The scarcity of small change in the early period of the war is pictured in the following quotation from the Bankers' Magazine for July, 1862:

> " The *North American* says: ' At an early hour in the morning there was not less than a hundred and fifty boys and men, and thirty-one young ladies and girls, awaiting a supply of pennies. The boys and men carried shot bags, cigar-boxes, baskets, and all sorts of contrivances in which to carry off the much-needed coin. The girls principally carried neat baskets. When the distribution came to be made, the girls were first served, to the intense chagrin of the men, who had been standing on a single foot, alternately, upon the sidewalk, for two or three hours.' "[2]

By September, 1862 fractional silver coins commanded a premium of from 10 to 16 per cent.[3]

Civil War Tokens. — The tokens issued during this period fall into the two groups — tradesmen's tokens and general tokens. The issues began in the latter part of 1862, reached their maximum in 1863, and dwindled away in 1864. The *Coin Collector's Journal* for 1876 mentions about 5000 varieties of one-cent tokens, both tradesmen's and general. For the most part they were of the same diameter and thickness, about the size of the small cent then in use; in appearance they were similar to the old copper cent. Most of them were copper alloyed.[1]

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[1] Hunt's, 26 (1852): 234.

[2] Bankers' Magazine, 17 (1862): 390.

[3] Hunt's, 47 (1862): 301.

From the various collections described, possibly with some duplication, there are records of approximately 4500 varieties of tradesmen's tokens alone. In one rather large collection[2] the distribution by states is: Ohio 1358, New York 914, Michigan 511, Wisconsin 385, Indiana 270, Illinois 160, Pennsylvania 156, and Rhode Island 130. The total for the New England states, exclusive of Rhode Island, is 22. The distribution by cities is also suggestive. The western cities were especially productive. Cleveland led the list in one collection with 888 varieties. In still another collection New York City gave over 100 types,[3] and Cincinnati is represented in still a different collection by 61 varieties.[4] Other cities represented with the number of issues are: Philadelphia 8, Chicago 5, Brooklyn 5, Albany 3, Newark 3, Boston 2, and Jersey City 2. As absolute figures, these records indicate very little, but relatively they may be taken to indicate in a general way the diversity of the issue and the concentration points. Two things militated against representative collections. In the first place, the collector was almost sure to make the bulk of his collection consist of varieties issued near the place where the collection was made, because by their nature the radius of circulation for these tokens was narrowly limited. In the second place, firms in small towns and small firms in cities were almost sure to be left out, because the smaller the issue the closer home they stayed.

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[1] Falkner, P.S.Q., 16 (1901): 324.

[2] Coin Collector's Journal, 1876, 12.

[3] The Chase Collection, American Philosophical Society of Philadelphia, Proceedings, 9 (1863): 242–258.

[4] Ezekiel, H. E., in the Numismatist, 1912, 218.

Frequently these tradesmen's tokens bore the emblem of an Indian head; and sometimes "Liberty and Union" or "Union forever" was used. One miller of Albany combined patriotism and business by putting on his coins, "Union Flour." In addition to the name and address of the issuer it was customary to use some advertising phrase, as "Use Miller's 50 cents N. Y. Hair Dye." It has been contended, but without much probability, that the appearance of the names of the issuing firms indicated intention to redeem. The more plausible explanation, and the one supported by the history of tradesmen's tokens issued at previous periods, is that the merchant or firm supplied these tokens largely to its own customers, and the presence of the name of the issuer, in addition to the advertising value, indicated not an intention to redeem in lawful money, but rather an implied promise to receive in trade for goods. This interpretation is supported by the fact that a few of the tokens carried, in addition to the name of the issuer, a specific promise to redeem. Sometimes redemption in bills was promised,[1] but more often the character of the redemption was not specified.[2]

The Civil War card money of Cincinnati was a type of tradesmen's tokens suggestive of the paper tokens issued during the War or 1812 period.[3] These card money tokens were merely promises-to-pay in the form of paper tickets with their value stated on them, and their use was probably confined largely to dealings with the firm issuing them. Their claim to classification as tokens comes from the fact that they were widely used to supply a deficiency of small coins and were recognized as a medium of exchange. Thirty-five firms issued general drink tickets ranging in value from one to twenty-five cents, nine firms issued bar tickets ranging from five to twenty-five cents, and one dancing academy used cards good for one dance. In all, sixty-one firms made use of this kind of money. The essential difference between these tokens and the metal ones was that the paper ones were cheaper. The circumstances of issue were the same.

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[1] An example of specific promise of redemption is: obverse, OLIVER BOUTWELL, MILLER, TROY, N. Y.; reverse, REDEEMED IN BILLS AT MY OFFICE. Chase collection.

[2] Falkner, P.S.Q., 16: 325.

[3] Ezekiel, Numismatist, 1912, 218.

Under the classification "general tokens" about 1300 varieties are described, as compared with the 4500 varieties of tradesmen's tokens.[1] This disparity in numbers does not indicate a similar difference in total output, because each type of general token probably represents a larger number of coins issued than would be true of the tradesmen's tokens. This observation is based on the fact that tradesmen's tokens were issued by a single firm, and the number so issued was limited by the amount that a merchant could put out in the course of his trade. The general tokens, on the other hand, were issued by firms which made token-issuing a part of their business, and their output was limited not by the trade of any one concern but by the needs of all the public.

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[1] Record is preserved of one Confederate cent token. On the obverse it bore, CONFEDERATE STATES OF AMERICA; reverse, 1/CENT. Size 12. Catalogue of Coins, etc., 122.

Paper tokens were also used similar to those issued during the War of 1812 period. The form taken was usually somewhat after the following example:

Richmond, Va. { Necessity is the mother of invention. } Sept. 10, 1861.
5 cts. 5 cts.

SOUTHERN EXCHANGE OFFICE
Basin Bank, Richmond, Va.
I promise to pay at my office
FIVE CENTS

Receivable for payment for flour, baled hay, oats, wood, etc., or in exchange for bankable funds, at my office, when presented in sums of five dollars.

This given under my hand and seal.

S. P. COCKE.

No. 9, 774.
Bankers' Magazine, 16 (1862): 828.

As in previous periods, these general tokens serve as commentaries on the thought and temper of the times. The far greater number bore such patriotic legends as; " Stand by the flag," " Army and Navy," " Union forever," " The Federal Union, it must and shall be preserved." One is particularly militaristic: obverse, THE FLAG OF OUR UNION; reverse, IF ANYBODY ATTEMPTS TO TEAR IT DOWN, SHOOT HIM ON THE SPOT. Even in that day there were pacifists, for we find on one coin, HORRORS OF WAR, BLESSINGS OF PEACE, 1863. An echo of the graft and scandal connected with government war supply contracts is found in the legend on some coins, " Millions for contractors." Frequently connected with this protest is the embryo of a propaganda for pensions in the phrase, " Not one cent for the widows."

A detailed study has been made of the tokens which circulated in Cincinnati.[1] The issue of 134 firms with a total of 359 varieties distributed as to date show:

28 firms	1862
112 "	1863
67 "	1864
16 "	no date

Sixteen varieties issued by W. K. Lamphear was the greatest number issued by any one firm. All of the tokens were of the size of the United States bronze cent, and with one exception were coined in Cincinnati. This study, admittedly incomplete, is indicative of the wide prevalence of these general tokens during those three years of greatest stringency.

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[1] Ezekiel, Numismatist, 1912, 119–121

The material out of which these Civil War tokens were made is indicated by an examination of the Chase collection deposited with the American Philosophical Society of Philadelphia.[1] Of the 303 different issues represented, 286 were copper, 17 brass, and 4 lead (some issues were represented in more than one metal). The size of these tokens ranges from 12 to 16, size 12 predominating. A test made at the United States Mint showed an average weight of 51 grains,[2] and a bullion value (computed at 32 cents per pound for copper, the average price at the time of their issue) of 25/100 of a cent. The money value was usually indicated by some such phrase as: "Good for one cent," "Not ONE cent," "I–O–U one cent," etc.[3]

With a bullion value less than one-fourth of the nominal value, the question naturally arises as to the profits of the issuers. They were not as great as the above figures might suggest. One Philadelphia merchant stated that in addition to the expense of making the die, the manufacture of the coins cost him seventy-five cents per hundred.[4] He used a composition resembling that in the nickel cent of 1857. Where a cheaper metal was used, the profit was greater. In small scale operations the cost of the die would eat up practically all the profits. The profit worth mentioning was made by firms which manufactured general tokens and sold them to retail dealers. The issue of one of these concerns is indicated by the legends found on one type: obverse, CHARLES LANG 1863; reverse, DIE SINKER AND GEN'L ENGRAVER, WORCESTER, MASS., L. Ruloff, or Roloff, was another wholesale producer of general tokens. Out of the 303 varieties of the Chase collection, 16 were issued by him.

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[1] Amer. Phil. Soc. of Phila., 9 (1863): 242–258.

[2] The U. S. cent weighed 72 grains (88 per cent copper and 12 per cent nickel).

[3] Amer. Phil. Soc. of Phila., 9: 244–258.

[4] Falkner, P.S.Q., 16: 327.

To meet the difficulty, the Director of the Mint in his report for the year ending June 30, 1862, recommended changing the dimes and half-dimes to three-fourths their weight at that time.[1] This measure would have been effective so long as the depreciation of the paper money did not exceed about 30 per cent. In 1862 the New York legislature attempted to solve the problem by passing a law prohibiting the issue of tokens.[2] How ineffective the law was is indicated by the large number of issues recorded from that state. The United States government took up the matter, and July 14, 1862, Secretary Chase wrote a letter to Thaddeus Stevens, Chairman of the Ways and Means Committee, in which he took cognizance of the disappearance of the small coins from circulation. He suggested lightening the weight of the smaller coins, and in the same connection suggested the prohibition of token coinage.[3] The response to this letter was the enactment of the law of July 17, 1862, providing for the distribution of postage stamps to be used for money. The law also prohibited the issue of tokens, and imposed as a penalty a fine of not exceeding $500, or imprisonment for not over six months, or both.[4] Circulars were sent out from the United States district attorneys' offices announcing that prompt prosecution would follow the violation of the law.[1]

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[1] At that time they were approximately 16/17 full weight. For the recommendation, see Hunt's, 48 (1863): 387, 388.

[2] Ibid., 47 (1862): 155.

[3] Congressional Globe, 37 Congress, 2d Session, 1861–62, p. 3405.

[4] "Sec. 2. *And be it further enacted*, That from and after the first day of August, eighteen hundred and sixty-two, no private corporation, banking association, firm, or individual shall make, issue, circulate, or pay any note, check, memorandum, token, or other obligation, for a less sum than one dollar, intended to circulate as money or to be received or used in lieu of lawful money of the United States. . . ." U. S. Stats. at Large, 12: 592.

The law of May 8, 1792 dealt only with copper, whereas this law covered all private issues under one dollar.

The postage stamps "afforded a miserable shift," and by November, 1862, there was a demand for some substitute for them.[2] To take their place the small notes authorized with the greenback issues were put out. In spite of strenuous efforts, it was found impossible at first to supply the demand for fractional money.[3] A year later the Secretary of the Treasury announced that the issue of fractional notes had been on a scale large enough to assure decided economic advantages, and indicated a satisfactory solution of the whole difficulty.[4]

Regardless of the success of such measures, it must be remembered that the issue of tokens did not cease with the passage of the law making their coinage illegal. The law was passed July, 1862, and the greatest issue of tokens came in 1863. In speaking of these tokens, the Director of the Mint in his report for 1863 said: "They were in direct violation of the laws of the United States; and the prosecution of certain parties issuing them has deterred others, and will soon drive them altogether from circulation."[5] The Philadelphia merchant previously referred to said that he was threatened with prosecution if he continued to issue tokens, but there appear to be no records of any prosecution actually instituted.[6] The end of the period of token issue did not come because of the law making the tokens illegal, but rather because the need which the tokens filled had been supplied by the issuance of fractional paper money and by an increased coinage of United States nickel

[1] Bankers' Magazine, 17 (1862): 256. [2] Hunt's, 47 (1862): 425.

[3] Report of Sec. of Treas., in Finance Reports, 1862, 28, 29.

[4] Ibid., 1863, 25.

[5] Finance Report, 1863, 189. [6] Falkner, P.S.Q., 16: 324.

cents.[1] With the close of the Civil War period the token as an emergency adjunct to our currency system practically passed out of existence.[2] The government met the problem once left to its individual citizens, and with this change came the close of an unique and picturesque chapter in the history of our coinage.

B. W. Barnard.

Princeton, N. J.

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[1] Issue of nickel cents:

1861	$101,000	1864	$529,737.14
1862	280,750	1865	354,292.86
1863	498,400		

Falkner, P.S.Q., 16: 322.

No satisfactory figures have been found indicating the total output of tokens during the Civil War period. One Philadelphia merchant claimed that his issue was relatively small and that he put out about 1000. It is reported that G. Lindemuller, a saloon-keeper in New York City, issued them to the value of $10,000. From the same source the information comes that the total number issued reached 25,000,000, to a value of $250,000. Referred to by Falkner, P. S. Q., 16: 326, 327.

[2] In the panic of 1893 a few paper tokens were issued but their circulation was restricted and of brief duration.

GASOLINE PRICES AS AFFECTED BY INTERLOCKING STOCKOWNERSHIP AND JOINT COST

SUMMARY

I. Gasoline prices and profits, 636. — II. Dominant position of Standard companies, 638. — Interlocking stock, 639. — Price inequalities, 640. — Dissolution not effective, 641. — III. Remedies proposed, 642. — Prohibition of interlocking stockownership, 643. — Segregation of pipe lines, 645. — Publicity of statistics, 646. — Standardization of product, 647. — IV. Prices and joint cost, 648. — Methods of computing cost, 648. — Dangers from joint cost, 652. — Reasonable price, 653.

THE Federal Trade Commission's *Report on Gasoline Prices in 1915* [1] is one of several reports on the oil industry which have been issued by that body or are in preparation. Two Senate resolutions — one from Senator Owen (1913), the other from Senator Gore (1914) — directed investigations concerning the relative profitableness of refining the different kinds of crude oil and the results of the decree which provided for the dissolution of the Standard Oil Company in 1911. Acting partly under these resolutions and partly under the general powers conferred upon it, the Commission had published a report on pipe-line transportation in the Mid-Continent field, and was proceeding with a general investigation of the petroleum industry, when the great rise in gasoline prices which took place in 1915 led it to inquire into the reasons for the advance. In taking this step it was influenced by the large number of complaints which poured in upon it.

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[1] Report on the Price of Gasoline in 1915, Washington, Government Printing Office, April 11, 1917.

I. Gasoline Prices and Profits

Roughly speaking, in the six months between July and December, 1915, the price of gasoline advanced by from seven to nine cents per gallon, an increase of from 75 to 85 per cent. At the same time, the quality of gasoline declined, the Commission's report stating that probably " the average gallon of volatile mineral oil sold under the name of gasoline had a Baumé test at least 1.5° lower in December, 1915, than it had in January of the same year " (p. 44). It is pointed out that altho improvements in gasoline motors have enabled those of recent construction to consume the less volatile mixtures put upon the market, the motors in use during the period under discussion are the ones to be considered.

The Report finds that the advance in prices is to be explained only in part on a competitive basis. In reaching this conclusion attention is not confined to cost, but " demand and supply " conditions are also considered. The discussion of the latter is interesting as being an attempt to draw semi-quantitative conclusions from statistics of production, stocks, and sales. Between 1914 and 1915 the consumption of gasoline increased about 38 per cent, and the production about 31 per cent. The difference was drawn from stocks, which were lower in the end of the year than at the beginning. The salient conclusion is that these total figures fail to explain the general advance in prices after October, or the differences in advance in different sections of the country. Reasoning from a diagram the Report (p. 57) concludes that "on the basis of competitive demand and supply, and without regard to cost, (1) the price of gasoline would have begun to advance about

June, as in that month stocks were decreasing rapidly while sales were increasing; (2) the price would have continued to advance until the early part of October, for the reason that up to that time decreasing stocks, increasing sales, and stationary production were the rule; and (3) a decline would have followed in December as a result of rapidly decreasing sales, increasing stocks, and a refinery output that was maintained at a maximum." Yet as a matter of fact prices rose sharply from October through December. Further, it is shown that the low price areas in 1915 (Middle West and Pacific Coast) were not generally those of low demand; and also that prices rose in all parts of the country, altho in some territories stocks increased and sales decreased, and in others the reverse was the case.

The Report goes on to state that, since demand and supply cannot be measured with sufficient accuracy to enable the determination of a reasonable market price, resort must be had to a basis of cost. In any event, competitive demand and supply are supposed to work out ultimately a price having a reasonable relation to cost.[1] Moreover a group of companies which has a position of dominance in an industry should act with especial care and moderation with regard to the extent to which it takes advantage of a period of scarcity to raise prices unduly above cost.

Costs are computed in the Report for representative refineries in three ways: (1) average specific cost per gallon of gasoline, (2) by-products method cost per gallon of gasoline, and (3) cost of all products per gallon of crude oil. On all bases, the computations indicate considerably increased margins of profit to the refiners. The margins per gallon of gasoline were generally from one to three cents per gallon greater in December, 1915 than in July. Nine out of the ten refineries covered by the cost figures showed good margins per gallon of crude oil and increases therein during the year (p. 97). Clearly, the increase in prices was greater than was necessitated by increased cost.

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[1] Of course, demand and supply may fix prices much above cost during short periods.

This fact is reflected in the large net earnings made by refineries in 1915. One of the most interesting features of the Report is the light it throws on earnings of Standard companies, some of which have never published income accounts. Of the eleven Standard companies covered, all made over 10 per cent on their net investments, and seven made over 20 per cent. The Standard of Indiana earned 36 per cent on its net investment; the Standard of Nebraska, over 37 per cent; the Continental Oil Company (Rocky Mountain territory), 34 per cent. The relatively high and steady returns received by the three Standard companies doing a purely marketing business is notable (p. 109).

As is often the case with those whose business is under fire, the refining companies argued that prices were high because of increased cost of materials. While the advance in crude oil, however, was important, the costs of other materials were so insignificant in amount that such advances as occurred did not have much effect. Acid cost, for example, was about 4/100 cent and caustic soda about 4/1000 cent, per gallon of gasoline.

II. DOMINANT POSITION OF STANDARD COMPANIES

The gasoline report shows that in 1915 the Standard companies, as classed therein, held over 75 per cent of the stocks of gasoline and made about 65 per cent of the sales of that commodity in the United States. The same companies had about 83 per cent of the exports. Standard producers and pipe lines controlled 70 per cent of the crude oil stocks toward the end of 1915. It is suggestive of the efficient marketing organization of the Standard group that its members controlled more crude than they owned and sold more gasoline than they produced.

The Commission announces that it has found no direct evidence of collusion among Standard companies. This is not to be taken as final, however, for its investigation has not been completed. The Report points to such indirect evidence as the continued lack of competition among the Standard companies, the maintenance of a division of territory among them, and the existence of a strong community of interest based on interlocking stockholding.

The extent of stockholding in common is indicated to equal about 70 per cent in various producing, pipeline, refining, tank-car, and marketing concerns. Over 50 per cent of the stock of these concerns was held in the names of some twenty-nine persons, such as Rockefeller, Harkness, Pratt, Flagler, Bostwick, Whitney, Archbold, and others well known. Moreover, the officers and directors of the various Standard companies are often large stockholders in potentially competitive Standard concerns. "Thus the president of the Standard of New Jersey, who in 1915 held 6000 shares ($3,258,000) in his own company, also owned 4575 shares ($1,029,375) in the Standard of New York, 300 shares ($207,000) in the Atlantic Refining Company, and 1858 shares ($1,012,610) in the Standard of Indiana, and 1100 shares ($480,150) in the Prairie Oil and Gas Company" (p. 145). Altho there appear to have been no interlocking directors, the foregoing condition is enough to create an effective barrier against competition.

Accordingly, one is not surprised to find that the country is divided into eleven distinct marketing territories,[1] following state lines, and that there is substantially no competition among these territories. It appears that widely different prices obtain among them. When one steps across an imaginary boundary into another " territory," one pays two cents more per gallon for gasoline. One of the most important points made in the Report is that considerable inequalities in price existed, which *corresponded exactly to nothing except arbitrarily maintained Standard marketing territories.* Differences of over eight cents per gallon at times obtained between some of the territories. At first glance these differences might seem to indicate an independent price policy and absence of concerted action. Further consideration, however, indicates that such inequalities could not have existed had there been no artificial division of territory, and, more than that, they could not have existed without the practice of more or less arbitrary price-making by companies having a considerable degree of control within the several " territories " and refraining from competition with one another.

As to degree of control within the several territories, the Report estimates that in nine of the eleven territories the particular Standard company doing business marketed over 50 per cent of the gasoline in 1915, and in one other territory (Pacific Coast) the Standard's 48 per cent gave it a substantially dominant position. It is indicated that in New England, New York, Pennsylvania, Delaware, and Ohio, Standard companies had about 70 per cent of the business. Accordingly the Standard market is generally followed by the so-called independents, including, by their own admission, such large companies as The Texas Company, and the Gulf

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[1] One small exception exists in Arkansas; in this state the Standard of Louisiana (owned by the Standard of New Jersey) and the Magnolia Petroleum Company (70 per cent of whose stock was owned by officers in the Standard of New Jersey and the Standard of New York) both did business.

Refining Company. Moreover, some indication of a variation of profits among Standard companies according to degree of control is to be seen, tho the information available is not full enough to make this certain. If the December "net backs" to the refineries (i. e., wholesale price minus freight and marketing cost) are taken as indicative of the extent to which the companies took advantage of the situation, there appears a rough correspondence of the amount of advantage taken with degree of control, the net back being highest in the case of the Standard of New York and lowest in the case of the Magnolia Petroleum Company. The diagrams showing the course of prices at representative points indicate also that prices were advanced earliest in those territories in which there was the greater control.[1]

Most of these general statements are subject to some exceptions. Thus in the territory of the Standard of Indiana, where the Standard company had 60 per cent of the gasoline business, the price was not advanced until nearly the middle of September. The situation in this territory, however, is peculiar in that it is here that the Standard company has met its most persistent competition. During the summer of 1915 it maintained a very low price, apparently for the purpose of gaining on its competitors; and it went so far that it not only seriously threatened their existence, but it actually sold below its own current cost of production for a time in the area occupied by its most active competitors. This is the most serious particular charge against Standard companies which can be based upon the Report.

No uncertainty can remain in the mind of the reader of the Report as to the effectiveness of the dissolution decree of 1911. While the decree is not attacked, but is regarded as an experiment — perhaps worth while trying at the time it was handed down — the chapter on "Position of the Standard Companies in the Industry" concludes with the words, "it is the Commission's judgment that in the oil industry the experiment of dissolving corporations without separating owners has not achieved the purpose of establishing effective competition." Combination was not destroyed; it remained, in the shape of a community of interest; and the territories as established have been carefully maintained. This last fact would appear to have special significance, inasmuch as the Supreme Court mentioned as one evidence of intent to monopolize, "the system of marketing which was adopted by which the country was divided into districts and the trade in each district in oil was turned over to a designated corporation within the combination and all others were excluded."[1] The recommendations made in the Report show that the Commission believes that the decree requires modification, the suggestion being made at one point "to enact into law the doctrine as to diverse ownership of competing corporations which has been laid down by the courts in the Union Pacific, Reading and other recent cases" (p. 164).

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[1] Some significance may also be attached to the fact that the two lowest percentages of net earnings shown were made by companies which were among the three having the lowest percentage of control. For the other of the three, the net earnings are not shown.

III. REMEDIES PROPOSED

For remedying the conditions disclosed, four measures or groups of measures are proposed: (1) limitations on interlocking stockownership, (2) segregation of pipe lines, (3) publicity of statistics, (4) a degree of standardization of product. It will be observed that the first two proposals look toward the increase of competition by removing the barriers which community of interest raises against the operation of that force; the second two are primarily calculated to make more effective the competition which now exists or may hereafter be established.

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[1] 221 U. S. 77.

All through the Report runs the idea that the absence of effective competition among Standard companies is due to community of interest based on interlocking stockownership. Five possible courses of action are suggested to remedy this condition, some of these being alternatives. (*a*) It is suggested that on the basis of the facts disclosed in the Report, the Attorney-General may deem advisable some further action under existing law. In view, however, of the care taken by the several Standard companies to comply with the letter of the dissolution decree and the lack of any direct evidence of collusion among them, this step does not appear probable. More promising are the various proposals for new legislation. (*b*) It is suggested that the Federal Trade Commission Act be amended so that when there has been a technical compliance with a decree of dissolution, but the desired results have failed to arise, it shall be the duty of the Attorney-General to file a bill of review with the court entering the decree. The court will then be compelled to reopen the case, and the findings of the Commission concerning competition and the like will be final evidence as to fact. A modified decree may be the result. Such a measure would appear to be constitutional and would provide a reasonable elasticity in regulation, according to changing industrial conditions. It would, however, work but slowly and might not be sufficiently drastic in some cases. (*c*) Perhaps the most drastic of the proposals adopted by the Commission is the prohibition of interlocking stockownership in the case of industrial corporations which have been dissolved under the Sherman anti-trust law. The former constituents of the Standard Oil combination would be reached and stockholders therein would be compelled to dispose of stock in all but one of such constituents. One possible objection to this proposal lies in its narrow application, since some dissolved corporations among which there is stock held in common may be in no need of further attack, while, on the other hand, in many cases competition among corporations which have not been dissolved may be more or less restricted by the same means. Another possible objection is that so disturbing an operation as compelling the sale of stock may not be necessary and that the end may be achieved in another way with less harmful results.

Accordingly, to meet these possible objections, a more general measure is proposed but one capable of being used less drastically, namely (*d*) to withdraw from all owners of stock in any two or more potentially competitive corporations the right to vote or hold office or otherwise exercise power of control in more than one of such corporations. This provision might be subject to evasion, but properly placed penalties might enforce it. If enforced, it would immediately prevent those who hold stock in two or more companies from becoming officers or directors in those companies, and from voting their stock. This would minimize the operation of community of interest. It would ultimately lead to a large reduction in interlocking stockholding by inducing sale.

To prevent interlocking stockownership is the fundamental remedy for a large part of the restriction of competition in the oil industry. If, however, this remedy is not adopted, the Report suggests as a last recourse, (*e*) taking the bull by the horns and treating the companies as one. Recognizing the fact of common ownership, it might be possible to hold the common owners liable for those unfair acts which result from their common interest. Thus, if price discriminations occurred between the "territories" of different companies, they would be dealt with as discrimination practised by a single company. There can be little doubt that one result of the dissolution decree has been that great inequalities in price can exist among the different territories of companies owned by the same individuals without subjecting the common owners to suit under Federal anti-discrimination law. The Standard of Indiana, for example, can maintain prices at a ruinously low level while the Standard companies in Ohio, Kentucky, Nebraska, and Montana get high prices.

Of course, the great danger of the last proposal lies in its recognition of unity among the companies. It might operate to bring them closer together in their price policies and thus lead to price regulation. Something like this must come, however, if competition fails.

A distinct phase of interlocking ownership is that which involves the relation among the different stages in the industry. In this respect the Report contains a recommendation that the ownership of pipe lines be segregated from ownership in the other branches of the petroleum industry. The recommendation is in accord with the general recognition of the strategic position held by transportation agencies of the common carrier type, and is in line with the "commodities clause" legislation. The Commission's investigation has clearly shown that the control over pipe lines has been one of the great advantages of Standard companies and that these transportation agencies have not been available to their competitors on the basis of reasonable rates and conditions of service. In the Pennsylvania region a group of small independent refiners has been stunted through dependence upon a limited supply of crude oil furnished to them through Standard pipe lines.

Perhaps the chief objection to the segregation of pipe lines lies in the difficulty of financing to which this policy would give rise. Pipe lines have generally been constructed by refining interests, and chiefly to meet their own requirements for raw material. The investment has been virtually a part of the refining company's investment. There is a considerable element of risk in constructing a pipe line, since the quantity of oil in a given pool is uncertain; but oil must be delivered to the refinery and consequently the investment must be made. If the pipe line were put strictly on its own basis, it is argued that no one could be found willing to make an investment so uncertain. On the other hand, it is to be pointed out that oil production is becoming more scientific and oil resources better known, thus reducing risk. Moreover, if refineries must have pipe lines they will pay for the services of these agencies what may be necessary to attract capital to them. It is doubtful if in the long run this payment would be any greater than the cost under present conditions; but if it were, would the equality of conditions secured not be worth the increase, from a public point of view ?

The two proposals looking toward a more perfect working of existing competition concern correct information and standardized product. The argument in the Report for publicity of correct statistics is of considerable interest to the economist. The forces of demand and supply are supposed, under competition, to establish a price which will tend to clear the market and which will tend to fix a normal price at cost plus normal profit. This supposition, however, is based on the further assumption that competitors, both buyers and sellers, are informed at least as to the facts of supply. If ignorance prevails concerning production and stocks — to say nothing of demand conditions — buyers and sellers work in the dark, and there is nothing to insure a balance of demand and supply. It is doubtful, under such circumstances, if any appreciable tendency toward the most desirable equilibrium exists, and certainly such a tendency may be so delayed in operation as to lack practical significance. The door is also kept open for manipulation. In almost every investigation undertaken by the Federal Trade Commission it has appeared that such price irregularities or excesses as have occurred have been materially facilitated by ignorance of the true condition of "the market," with the attendant uncertainty or even panic. This has been true of other articles, such as news-print paper and of coal. It was true of gasoline. One jobber is quoted in the Report as follows: "I suppose it cost me $50,000 last year (1915) for lack of knowledge. If we had had any way to know the true conditions, we could have protected ourselves in the market." In short, we cannot count upon a close adjustment between demand and supply when demand and supply conditions are not known. Economists should stress this more in their theories of value, and statesmen should consider it in passing laws for the purpose of correcting unreasonable prices.

As to standardization, it is clear that when no man knows what he is buying no man can buy intelligently, and competition must do its work blindfolded. Gasoline as sold in 1915 is shown in the Report to have ranged from 57° to 65° Baumé test. More than this, it had ceased to be a homogeneous product and in its name were sold blends of heavy naphtha or "cracked" residual products combined with more volatile elements. The Report recommends that Congress define what shall be sold in interstate commerce as "gasoline." This, of course, would not prevent the sale of inferior motor fuels, but it would prevent their sale under a misleading name.

IV. PRICES AND JOINT COST

The heart of the Report lies in its chapter on cost and margins; and to the economist this chapter is of interest because of the light it throws on the problem of "joint cost." Obviously petroleum refining involves "joint cost" to a great extent; out of a barrel of crude oil are produced such different things as gasoline and coke, lubricating oil and asphalt, not to mention kerosene and fuel oil.

As a first step in cost analysis, the computations based upon a gallon of crude oil may be noted (pp. 221 f., 95 f.). These show the actual book cost of the crude and the average cost of refining it. Then the value of all the products obtained from the gallon of crude is computed. The difference is the current operating margin per gallon of crude oil consumed. A common condition in 1915 would be that of a plant whose crude cost $3.40 per hundred gallons; refining added ninety cents more; total cost would be $4.30. Out of this crude as chief products came twenty-one gallons of gasoline worth $2.00 at the refinery; thirty-five gallons kerosene worth $1.60; twenty gallons of fuel oil worth fifty cents; and eleven gallons of lubricating oil worth $1.70. The total value of these chief products, $5.80, taken alone, would have given a margin of $1.50 per hundred gallons of crude. Actual margins in 1915 ranged from losses in some months up to profit margins over $3.00 per hundred gallons of crude refined.[1]

But this does not reveal anything as to the specific cost of gasoline. In attempting to segregate this cost, one's first thought is to strike a sort of average by prorating the total cost — crude plus refining — equally among all gallons of products. This method would give, in the second six months of 1915, average costs ranging all the way from $2.62 per hundred gallons of product up to $6.39 per hundred gallons. Clearly, with fuel oil piling up at a price of $3.00 per hundred gallons, and kerosene selling at $4.50, over half of the quantity of products from the crude must be sold at a loss, if costs were thus figured. On the other hand, gasoline at $13.00 per hundred gallons and lubricating oil at $15.50 would yield an unreasonably high margin above such an average cost.

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[1] Several refining companies consumed over 500,000,000 gallons of crude in 1915.

The situation is that these different products are all necessarily produced, and that they must be produced in certain rather closely fixed proportions. If the refiner, when kerosene could not be sold at the average cost, could cease to make it, or at least reduce its output largely, he would so decrease the supply as to bring about an advance in price which would bring it up to the average cost. Similarly (still supposing he could vary his products at will) he would produce more of gasoline, so that its price would tend to fall toward the average cost. If the demand for kerosene were so lacking in intensity that no one would pay the average cost, no kerosene would be made under the conditions supposed. On the other hand, if the demand for gasoline were so intense that it could all be sold for more than any other product, the refiner on the same assumption, would produce nothing but gasoline. There would be a tendency for price to conform to average cost.

But — perhaps unfortunately — under present methods over 50 per cent of the crude oil refined *must* go into kerosene and fuel oil classes of products. No effort or sacrifice can make a given crude yield over 50 per cent of gasoline and lubricating oils by commercially successful methods. Consequently the production cannot readily be varied in proportion to changes in the market prices of the products, and prices cannot be said to have a tendency to equal average cost. In fact, cost loses a large part of its price-determining significance. When one has thousands of barrels of kerosene piling up in one's tanks, one can't wait for prices to rise to an average cost before one sells it. And this is especially true when one can sell one's gasoline for enough above average cost to cover the "loss" on kerosene. In fact, cost may become little more than a mere question of commercial expediency, and be imputed to that one of the necessarily joint products which can best bear it in the judgment of the refiner.

When one of the joint products is clearly the main product, in the sense that any others are merely incidental to its manufacture, the situation is relatively simple; for then the entire cost of the business may be properly charged to the main product and receipts from the sale of the incidental by-products[1] be applied toward reducing its cost. This is not a case of true economic joint cost. And this is what certainly exists in part of the oil refining industry. Some small refineries, known in the trade as "skimming plants," are run almost solely to produce gasoline, the balance of the crude content being thrown into kerosene and fuel oil which are sold for what they will bring. Even at larger and more elaborately equipped plants this condition has been approximated. Accordingly, the Report lays most stress upon what is called therein the by-products method, pointing out, however, that the costs of gasoline so computed are maximum figures and not costs at all in the strict sense of the term. On this basis gasoline costs, at various refineries, varied from about $4.50 to $8.65 per hundred gallons in the second half of 1915 — as compared with an *average* cost of from $2.62 to $6.39.

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[1] The term "by-products" is used loosely. Obviously it has a significance which is largely if not entirely relative. It may be applied to one of several equally important products, or to some product which is incidental to a chief product and which has little or no economic importance. The "by-product" may or may not be necessarily connected with the production of the main product; and the necessity, if it exists, may lie in the physics or chemistry of the situation or in economy. What is generally a "by-product" may be so large a part of the output of some producers as to be their chief product, perhaps on account of special advantage. The writer would suggest that economists confine their use of the term to any product which is necessarily attached to the production of some main product or products, and which is so unimportant as a source of income as to be unnecessary to the existence of the industry concerned. This would make the class, "by-products," a species of the genus "joint product." Further suggestion along this line will be found in the writer's article on "Joint Costs with Especial Regard to Railways" published in this Journal, February, 1916.

When there is no single main product, but several products exist which can be sold for more than the average cost, the situation is naturally different. This is especially true when the several main products are each and all essential to the profitable conduct of the business. Thus an eastern refinery, having to pay considerable transportation costs on its Oklahoma and Mexican crude oil, could hardly afford not to work its crude more intensively than a "skimming plant." In such a case lubricating oils, for example, may become a second main product, and consequently it would not be logical to bring them with other products as a credit to gasoline cost. This is a case of true economic joint cost, and is much more difficult to handle than the case of a single main product.

In the Report, the method pursued is to use the average cost of all products as the cost of gasoline,[1] when products other than gasoline show a gain rather than a loss as compared with their average cost. In other words, profits on by-products, when regularly received, are not deducted from the cost of the main product (p. 87 f.). Obviously this is but a rough way of dealing with the problem, and could not be used at all if separate costs were being worked out for both gasoline and lubricating oil, to say nothing of other products.

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[1] The "average specific cost of gasoline" might have been used more logically, but there is little difference between the two figures.

If an attempt were to be made to ascertain the costs of two or more main joint products, the logical procedure (as a practical matter) would appear to be to assign specific costs directly and to divide the remainder of total cost between them on the basis of gallons produced, making allowance for differences in value when these are such as to indicate truly the relative intensity of normal demands. Then receipts from other products should be deducted from the costs so ascertained in such a way as to bring them as closely as possible to average specific cost.[1] In this way "losses" on other products would be divided in proportion to ability to bear.

It is to be observed that the apportionment of cost among the various joint products is much affected by the relation among the prices received for such products. The low prices recently prevailing in the refined oil (kerosene) market have directly necessitated the apportionment of losses on kerosene to the cost of gasoline. Incidentally, this has tended to decrease the output of refined oil and to increase that of gasoline. As already pointed out, however, there are narrow limits within which supply adjustments can be effected; and this of course is the great reason why the cost (and price) of one joint product must depend in part upon the price of the other.

This situation introduces a "what the traffic will bear" policy into gasoline prices, a sort of taxation power being given to the seller. Kerosene will not stand much of a charge and is sold cheap, while gasoline will bear a high price and is levied upon accordingly. The danger in this absence of a definite cost basis is twofold: first, that discrimination will be practised; second, that prices which are absolutely too high will be exacted. To take up the latter point first, the trouble obviously lies in the fact that no cost is known for any one of the several refinery products. When the refiner can ask " what is the cost of gasoline, kerosene, fuel oil, and lubricating oil ? " and no one can answer — what is to prevent prices from going too high ? Even where there is competition it must work blindly and uncertainly if no one knows the bottom price. Where little effective competition is found, as in the gasoline industry, a large margin is likely to be secured. A contributing factor has been the dense ignorance concerning the investment and earnings of the chief refining companies. The large net earnings received by most of the refiners in 1915, and known to have been received for years by Standard companies, certainly are consistent with the foregoing reasoning.

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[1] Thus those costs which were most in excess of average specific cost would be first credited with receipts from by-products, tending to reduce all gradually to the normal level.

As to the discrimination — using the term in a non-legal sense — it manifests itself (1) in the wide difference in price between gasoline and kerosene, (2) in the wide differences in price between different sections of the country, (3) in the existence of " quantity discounts " and " allowances " in the same locality. These things would not have existed to the extent that they have in the gasoline business had the cost of gasoline been known and not been inextricably mixed up with that of other products.

But just as in the field of railway rates we may search for the reasonable rate, so here we may inquire what is a reasonable price for gasoline. To begin with, the return from the sale of the joint products must be such as to yield no more than a reasonable return on the investment, which of course will depend partly upon risk. This seeming truism has a direct practical bearing upon the problem in hand, for with a total charge for all products no greater than what will yield a reasonable return on investment, the prices on the several products under competition would normally be adjusted so as to correspond as nearly as possible to the average cost (including necessary profit) per gallon of product.[1] Average cost is simply total fair price of all products (including reasonable profit) divided by gallons of product. If, then, kerosene could not be sold in competition for the average cost, the excess of average cost over price would justly be charged to gasoline or other high-demand product. The maximum normal price that can be justified under competition for gasoline is accordingly the average cost[1] plus the excesses of average cost over prices received for other products.

The idea may be expressed in another way. Having ascertained the sum which is necessary to yield a reasonable return on investment, the reasonable average margin of profit can be computed. When some of the joint products yield a margin over average cost which is less than this reasonable average margin, the deficiency is charged to those products which yield more — say in the ratio of their profitableness over a series of years — and at the same time any excess in the total margin is cut down, the reduction being adjusted among the high-profit products on a progressive basis. The result is a total margin which yields a fair return and which is fairly adjusted among the joint products.

It is indicated in the Report that the costs and prices of July, 1915, resulted in sufficient margins on gasoline to the Standard refiners. As these margins were computed according to the by-products method, which charges to the cost of gasoline the excesses of average cost of other products over their prices, and, as this method has the significance indicated in the preceding paragraph, it would seem that the excesses in the December margins over those of July were not justified under competitive conditions. In the cases of several companies the December excess was in the neighborhood of three cents per gallon, and one might infer from the Report that prices about three cents lower than those charged in December would have been sufficient.

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[1] However, if there were an important item of specific cost directly assignable to one product it would probably be allocated first and only the balance assigned.

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A STUDY OF MITCHELL'S INQUIRIES INTO PRICES[1]

SUMMARY

I. Introductory. Method and purpose of this paper; Mitchell's figures subjected to more refined methods, 656. — II. Comparison of wholesale and retail prices, 658; lag of retail prices not clearly established, 659. — Producers' goods and consumers' goods; examination of annual, quarterly and monthly data, 660. — III. Raw materials, partly manufactured and finished goods move concurrently, 663. — Influence of raw materials eliminated, 664. — Dissimilar price fluctuations of producers' and consumers' goods, 665. — IV. Organic and inorganic goods; Sombart's theory tested, 666. — V. Wages in England and United States; closer relation between wages and wholesale prices in the former, 668. — VI. Summary and conclusions. Mitchell confirmed in part only, 671. — Annual figures not necessarily homogeneous; quarterly figures suggested, 673.

I

MITCHELL'S *Business Cycles* is justly characterized by reviewers of the work as " the most complete and careful study of the phenomena connected with business cycles,"[2] and " by far the most elaborate treatise on the subject that has yet appeared in the English language."[3] Another writer remarks that " altho much still remains to be done in the field of the business cycle, the value of Professor Mitchell's contribution to our knowledge of the subject can hardly be overestimated."[4] Mitchell goes into the world of facts, selects data, constructs index numbers, plots curves. This done, he interprets the results. His deductions and interpretations are based mainly on annual data presented in graphic form. The degree of fluctuation, the correspondence or lack of correspondence of the cyclical movements, the amount of lag of the fluctuations of one series as compared with those of another, is by inspection of the simple graphs. It is this subjective method which the present paper considers and tests. No endeavor is here made to present additional data, or to revise in any way the material so admirably presented by Mitchell. The purpose is simply to introduce more objective methods of testing the validity of his conclusions.

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[1] I am indebted to Professor W. M. Persons for suggesting this inquiry, which was carried on in connection with the graduate course on statistics conducted by him at Harvard University during the past academic year.

[2] Quarterly Journal of Economics, vol. xxviii, pp. 795–810 (Persons).

[3] Economic Journal, vol. xxiv, pp. 78–80 (Pigou).

[4] Journal of Political Economy, vol. xxiv, pp. 609–611 (Sprague).

Not every table or chart or conclusion in Mitchell's book will be examined, but only those which are closely related to the problem at hand and are not so obvious as to be generally accepted.[1] The price series used throughout are in the form of index numbers based upon the arithmetic average 1890–99 as 100. Unless otherwise specified the figures represent annual data. Where in any series figures are wanting, the corresponding figures in the series with which it is compared are elided in the interest of consistency.

I shall bring to the task of testing the cyclical movements of the respective price series the Pearsonian coefficient of correlation.[2] Considerations of accuracy as well as of ease of calculation lead me to correlate *first differences*[3] rather than *cycles*. Each series will ordi-

[1] For example, the relations which Mitchell finds existing between interest rates on bonds, commercial paper and call loans are easily discerned from the graphs and generally accepted by economists. The same might be said of other series. Cf. Mitchell, Business Cycles, pp. 140–56.

[2] For a discussion of this device and its practical application see Yule, An Introduction to the Theory of Statistics, chaps. 9 and 10.

[3] So long as the secular trend is linear the results obtained by the method of first differences have in a number of independent tests been found by Professor Warren M. Persons to be substantially the same as those obtained by the more involved but no more accurate method of cycles. For a comparison of the practical results of these two

narily be compared with another series concurrently and also for a lag in both directions. The expressions "previous," "concurrent," and "lag" in the tables which follow invariably refer to the last named of the series paired. The index of correlation is carried to two places only, since the probable inaccuracy of the original data will not justify further refinement.

For the purposes of the present inquiry it is a matter of indifference whether relative dispersion be measured by the standard deviation or by the coefficient of variation.[1] For convenience I shall ordinarily use the standard deviation of the first differences. In certain instances the other criterion may be introduced as a check on the results.

II

Mitchell finds that the retail prices of thirty staple foods as compiled by the United States Bureau of Labor show a "certain correspondence" with business conditions, despite the fact that "the supply of vegetable and animal foods varies in an arbitrary fashion determined by the weather and the demand for staple foods is less affected by prosperity and depression than that of more dispensable commodities."[2]

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methods the reader is referred to an article by Professor Persons on the "Construction of a Business Barometer" in the American Economic Review for December, 1916, vol. vi, pp. 739–69, especially pp. 755 ff. A recent theoretical discussion of this method by the same author appears in the Quarterly Publications of the American Statistical Association, vol. xvi, no. 118, June, 1917. Tho this coefficient is smaller than that of the cycles, it has the advantage of being more sensitive than the latter to variations in the series compared. Besides, for the present purpose not absolute size but the relation existing between the coefficients is the important thing.

[1] Cf. Yule, An Introduction to the Theory of Statistics, pp. 134–44, and 149. The standard deviation of first differences differs from that of the original series merely in size. Both may be equally relied upon as a measure of relative fluctuation. The justification for the employment of the standard deviation lies in the fact that the series compared are in the form of index numbers based on the arithmetic average 1890–99 as 100, which may therefore be said to be made up of comparable units. The small amount of error due to the fact that the arithmetic mean for the entire series may not be 100 may for present purposes be ignored.

[2] Mitchell, Business Cycles, p. 95.

In the comparison of consumers' goods at wholesale and at retail, satisfactory results can be obtained only by comparing series which contain the same classes of commodities. Since the currently published index numbers do not meet this test, Mitchell finds it necessary to reconstruct the two series upon the basis of figures obtained from the Bureau of Labor Bulletin. Average relative prices for twenty-five commodities[1] are accordingly arranged in two series — at wholesale and at retail — and two curves are plotted from these figures.[2] Mitchell observes that "while these two series agree closely in the general trend of fluctuations, the retail prices are much more stable. They lag behind wholesale prices both on the rise and on the fall, but more on the fall than on the rise."[3]

The correlation of relative prices at retail with relative prices at wholesale of twenty-five staple foods[4] yields the following results:

TABLE I. — TWENTY-FIVE STAPLE FOODS AT WHOLESALE AND RETAIL (1890–1907)

(The expressions "previous," "concurrent" and "lag" refer to the last named of the series paired)

Series Correlated	Coefficients of Correlation One Year Previous	Concurrent	One year Lag
Retail prices and wholesale prices	+.09	+.72	+.15

It is clear from this test that Mitchell's contention that the series move together is not without foundation, since there is a considerable degree of correlation between them (+.72). But it is to be noted also that the point of highest agreement appears in the concurrent data as distinguished from a lag in either direction. The slightly higher degree of correlation for the one year lag than for the previous year is not significant, since the difference is small and the coefficient low.

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[1] Mitchell, Business Cycles, p. 96, note 9.

[2] Ibid., p. 97.

[3] Ibid., p. 98.

[4] Ibid., Table 3, Chart 1, p. 97.

The greater stability in retail prices than in wholesale prices is indicated by their standard deviations, 4.2 and 6.8 respectively.

Mitchell asserts further that as between producers' and consumers' goods the same phenomenon appears. "As consumers' goods at retail are more stable in price than the same goods at wholesale, so consumers' goods even at wholesale, are more stable in price than producers' goods. . . . The availability of data by months for recent years makes it possible to carry out this comparison in detail for the period including the latest crisis, depression and revival of business activity.

"The comparison by months shows that producers' goods reached their highest point earlier in 1907 than consumers' goods, and were on the down-grade several months before the panic broke out. Their decline in 1908 was also greater in degree, their recovery began sooner and proceeded at a faster pace. In brief, within short periods as within long, the prices of producers' goods appear to be decidedly more sensitive than prices of consumers' goods to alterations in business conditions."

Let us apply our tests first to the annual data on this topic. So far as the degree of fluctuation is concerned, consumers' goods show more stability than producers' goods, since the standard deviation of the former is 4.7, while that of the latter is 5.8. But in point of time the prices of both types of goods move together. The two series correlate with each other most closely for the same year (+.74), while the correlation of consumers' goods with producers' goods for the previous year is but moderate (+.41), and the agreement for the lag of one year is of no significance. Again, there is some tendency for the prices of producers' goods to move earlier than those of consumers' goods, but the tendency is not marked.

TABLE II. — CONSUMERS' AND PRODUCERS' GOODS AT WHOLESALE IN THE UNITED STATES (1890–1910)[1]

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Consumers' goods and producers' goods	+.41	+.74	+.05

Series	Standard Deviations
Producers' goods	5.8
Consumers' goods	4.7

It will now be interesting to look for a moment at the monthly data, which run through the business cycle of 1907. Tho Mitchell has not charted the monthly figures I feel warranted in examining them, since he brings the monthly as well as the annual data to the support of his conclusions. I have correlated these two monthly series[2] with each other for concurrent months and for lags of three-month intervals in each direction with results which, tho low, may be said to be of some significance. As in the case of the annual figures, the concurrent correlation is the highest (+.36). The other coefficients are either low or negative, with the possible exception of that resulting from the correlation of the prices of consumers' goods with producers' goods for six months previous (+.27). This, if it indicates anything at all, signifies a slight tendency of the prices of producers' goods to move before those of consumers' goods. It should be observed that these coefficients do not descend gradually from the highest point in each direction as do those of the quarterly figures which appear later.

[1] For series correlated see Mitchell, Business Cycles, Table 4, p. 98.

[2] Ibid., Table 4, p. 99.

TABLE III. — CONSUMERS' AND PRODUCERS' GOODS AT WHOLESALE IN THE UNITED STATES

(By months, January, 1907 to December, 1910, inclusive)

Series Correlated	Coefficients of Correlation
Consumers' goods and producers' goods:	
Twelve months previous	−.09
Nine months previous	+.19
Six months previous	+.27
Three months previous	+.13
Concurrent	+.36
Three months lag	−.09
Six months lag	−.10
Nine months lag	−.08

Turn now to the results for quarters. They are more in accord with Mitchell's conclusions. Inasmuch as he does not present quarterly figures, I have resolved his monthly series, 1907–1910,[1] into quarterly series by means of a three-month arithmetic average. This treatment of his data, however, reduces the number of items in each series to fifteen at most, and thereby impairs measurably the reliability of the respective indices of correlation. Here the highest degree of correlation is perceived when prices of consumers' goods for the current quarter are correlated with those of producers' goods for the previous quarter (+.46). The correlation for the second previous quarter (+.37) is equally as high as the concurrent correlation (+.36). The agreement with the third previous quarter (+.21) is too low to be of any significance. The least harmony occurs between consumers' goods for the current quarter and producers' goods for the second subsequent quarter −.24). It should be noted that the results diminish regularly from the maximum in each direction. What I have just presented is the strongest evidence I can find from the material at hand that the prices in question behave in the manner suggested by Mitchell. Unfortunately, the lack of sufficient data precludes any definite conclusion.

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[1] Business Cycles, Table 4, p. 99.

TABLE IV. — PRODUCERS' AND CONSUMERS' GOODS AT WHOLESALE IN THE UNITED STATES

(By quarters, January, 1907 to December, 1910, inclusive)

Series Correlated	Coefficients of Correlation
Consumers' goods and producers' goods:	
Four quarters previous	−.01
Three quarters previous	+.21
Two quarters previous	+.37
One quarter previous	+*.46*
Concurrent	+.36
One quarters lag	−.05
Two quarters lag	−.24
Three quarters lag	−.14

III

An inquiry into the relation between the prices of finished products and of raw materials from which they are made is significant. Mitchell's comparison of the curves of the relative prices of twenty pairs of raw materials and their manufactured products [1] indicates "that, whether the comparison be by months or years, the prices of raw materials respond more promptly and in larger measure to changes in business conditions than do the prices of their products." And the introduction of an intermediate curve representing the prices of partly manufactured goods [2] leads him to the further conclusion that the degree of steadiness of the prices of goods is a function of their nearness to or remoteness from the raw state.[3]

The method of correlation does not in this case strengthen Mitchell's position. For if we accept his annual data as the correct basis and compare the prices of the twenty raw materials with the prices of the twenty manufactured articles, we find the prices of the two series for the same year moving very closely together (+.94), while the prices of raw materials for the preceding year agree in a less measure (+.24), and for the one year lag not at all (−.04).

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[1] Mitchell, Business Cycles, Chart 2, p. 100, and Table 5, p. 101.

[2] Ibid., Chart 3, p. 100, Table 5, p. 101.

[3] Ibid., p. 102.

TABLE V. — TWENTY RAW MATERIALS AND THEIR MANUFACTURED PRODUCTS (1890–1910)

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Manufactured products and raw materials	+.24	+.94	−.04

The author's assertion seems also at variance with the facts revealed in the case of the "five triplets,"[1] tho more evidence can here be invoked in his support than in the previous instance. Prices of raw materials move concurrently with prices of partly manufactured products (+.76), which latter in turn harmonize with the prices of finished products for the same year in a slightly less degree (+.69). And the prices of finished products agree as closely with the prices of raw materials for the concurrent as for the previous year (+.52). Correlation for the one year lag is negative. One of the most striking features of the table which follows is the higher correlation of finished products for the current year with raw materials for the previous year (+.52) than of partly manufactured products for the current year with raw materials for the preceding year (+.38), or with finished products for the succeeding year (+.32). Furthermore, the last two coefficients are of approximately the same size. It is just possible that the agreement between the intermediate and other stages of manufacture might have been closer had the period been reduced to quarters.

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[1] The phrase quoted refers to three sets of index numbers of prices of five selected commodities in their raw, partly manufactured and finished states.

TABLE VI. — FIVE COMMODITIES IN THEIR RAW, PARTLY MANUFACTURED AND FINISHED STATE (1890–1910)

The "Five Triplets"

Series Correlated	Coefficients of Correlation One Year Previous	Concurrent	One Year Lag
Partly manufactured products and raw materials	+.38	*+.76*	−.15
Finished products and raw materials	+.52	+.52	−.17
Finished products and partly manufactured products	+.32	*+.69*	−.04

But this greater sensitiveness of raw materials, suggests Mitchell, may mean that consumers' goods are less sensitive than producers' goods because the former are chiefly finished products. He tests this situation by constructing and charting[1] series which contain, not the prices of raw materials, but simply those of consumer's manufactured products on the one hand and producers' manufactured products on the other. Inspection of his graphic presentation leads him to the conclusion that from the point of view of sensitiveness to alterations in business conditions, as well as of the range of the oscillations, producers' manufactured articles occupy a position intermediate between that of raw materials and consumers' goods.

It is true that the indices of variability of the three series, as well as their respective curves,[2] reveal wider oscillations in the goods as the raw state is approached. Below are the measures of dispersion of the three series in question:

TABLE VII. — DISSIMILAR PRICE FLUCTUATIONS OF PRODUCERS' AND CONSUMERS' GOODS

Series	Coefficients of Variation — Original Series	Standard First Differences	Deviations Original Series
Raw materials, producers' goods	15.9	7.6	18.4
Producers' manufactured goods	11.0	6.8	12.0
Consumers' manufactured articles	8.5	4.7	9.0

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[1] Business Cycles, Table 6, p. 103, and Chart 4, p. 103.

[2] Ibid., Chart 4, p. 103.

It will be observed that, whatever method we pursue, the relation found is that advanced by Carver[1] and accepted by Mitchell in explanation of the business cycle.

But the figures when subjected to the correlation method do not support the proposition that the prices of producers' goods characteristically move earlier in point of time than those of consumers' commodities. For when the price series for consumers' manufactured commodities is compared with that of producers' manufactured commodities for the previous year the degree of agreement is only moderate (+.31), whereas the coefficient of correlation of the concurrent figures is substantial (+.81). Likewise, raw materials compare with producers' manufactured articles most favorably when the figures compared are for the same year (+.87).

TABLE VIII. — RAW MATERIALS AND MANUFACTURED COMMODITIES USED BY PRODUCERS AND BY CONSUMERS (1890–1910)

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Manufactured articles used by consumers, and manufactured articles used by producers	+.31	*+.81*	+.02
Raw materials used by producers, and manufactured articles used by producers	−.00	*+.87*	+.48

IV

Sombart's theory that business cycles are caused by the different rhythms of production in the organic and inorganic realms suggests to Mitchell a comparison of the prices of minerals, the characteristic inorganic raw materials, with the prices of organic goods such as forest, animal and farm products.[2] For the purpose at hand the prices of raw materials only are considered by him, on account of their independence of improvements in the arts. He finds that " of the four series, the inorganic mineral products reflect the business cycles with least distortion for the whole period; but their superiority as a 'trade barometer' over the organic forest products is due chiefly to the steady rise of the latter from 1901 to 1907, . . . due to a gradual reduction in the supplies of lumber within easy reach of the great eastern markets from which the quotations come, and to a closer organization among the lumber interests. . . . In the case of animal and farm products, however, where dependence is not upon natural deposits of minerals, and of forests which have grown through decades, but upon the fruits of human labor during one or two seasons, frequent contradictions between the movements of prices on the one hand and changes in business conditions on the other hand seem likely to continue for an indefinite time to come. Sombart's theory in other words might be more accurately formulated in terms of contrast between goods the supply of which within short periods depends largely upon the weather, and goods the supply of which within short periods depends almost entirely upon the activity of enterprise." [1]

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[1] Quarterly Journal of Economics, May, 1903, vol. xvii, pp. 497–500.

[2] Mitchell, Business Cycles, Chart 5, p. 105, and Table 7, pp. 106–07. The series are made up of 41 mineral, 19 forest, 41 animal and 58 farm products.

The correlation of these figures yields results which in part corroborate the conclusions set forth. The maximum correlation of mineral products with the other three series is greatest for forest products (+.67), slightly less for animal products (+.38), and practically insignificant in the case of farm products (+.02). The closer concurrent correlation between forest products and the other organic products (farm +.32, animal +.48) than between the inorganic products (minerals) and the same organic goods (farm +.02, animal +.38), is interesting in the light of Mitchell's suggestion that forest products since 1900 have been losing their force as a business barometer.

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[1] Business Cycles, pp. 108-09.

The moderate degree of correlation between farm products for the current year and mineral and forest products for the preceding year (+.42 and +.34 respectively) is worthy of note. It is therefore evident that, to some extent at least, mineral and forest products unite in forecasting the prices of farm products, despite the close dependency of farm production upon weather conditions, and the inelastic nature of the demand curve for agricultural products. So that, unless the relation established is to be interpreted as an accidental coincidence, one is unable to join Mitchell in the assertion that "weather conditions constitute such an important factor that movements initiated in the mineral industries would be but imperfectly reflected in the farming industry."

TABLE IX. — ORGANIC AND INORGANIC GOODS IN THEIR RAW STATE (1890–1910)

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Forest products and mineral products	+.14	+*.67*	−.02
Animal products and mineral products	−.18	+*.38*	+.18
Farm products and mineral products	+*.42*	+.02	+.12
Farm products and forest products	+*.34*	+.32	−.03
Animal products and forest products	−.19	+*.48*	+.34
Farm products and animal products	+.13	+*.50*	+.16

V

Wages remain to be discussed. Mitchell directs attention to the incompleteness of the data[1] due to the fact that, for the most part, only manufacturing industries are included. But since manufacturing centers exhibit the phenomena of business cycles in a pronounced degree, it is perhaps fortunate that the limitations are as they are. Mitchell concludes that "the figures indicate that the prices of labor are influenced by changes in business conditions, but in less degree than the prices of commodities at retail," and in a much less degree than those of commodities at wholesale. Further, "the range covered by the relative prices of labor is narrower, and the degree of concentration about the median is greater than with wholesale prices."[1]

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[1] The American figures are taken from the United States Bureau of Labor Bulletins of July, 1904–08. The figures are weighted according to the number in each employment in the construction of new series only.

To what extent are these conclusions justified by the method we are pursuing? In the first place, if wholesale prices may be taken as a barometer of business conditions, retail prices respond more quickly to changes in wholesale prices than do wages. For wholesale prices correlate more closely with the former (+.77) than with the latter (+.57). The fact yet remains that they move concurrently, and that there is a more substantial agreement between wholesale prices for the current year and wages for the following year (+.51) than with retail prices for the following year (+.30). The standard deviations of the first differences of these three series show that the character of the dispersion is as described by Mitchell, greatest for wholesale prices (5.8), less for retail prices (2.4), and least of all for labor (2.2).

TABLE X. — WAGES, AND COMMODITIES AT WHOLESALE AND RETAIL IN THE UNITED STATES (1890–1907)[2]

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Wages and wholesale prices	+.51	+.57	+.40
Retail prices and wholesale prices	+.30	+.77	+.23

Series	Standard Deviations (First Differences)
Wholesale prices	5.8
Retail prices	2.4
Wages	2.2

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[1] Mitchell, Business Cycles, pp. 132, 133.

[2] Wholesale prices, Dun-Gibson Index Number Improved.
Retail prices of thirty staple foods.
Wages per hour in forty-one manufacturing industries.

Mitchell's investigation of English wages leads him to assert that " English wages pursue a course far more even than do prices at wholesale. But when compared with the Board of Trade's series for the retail prices of food the difference is less marked. . . . Finally, when the English and American index numbers are compared they reflect the differences in the course of business cycles." [1]

TABLE XI. — WAGES, AND COMMODITIES AT WHOLESALE AND RETAIL IN ENGLAND (1890–1910)

	Coefficients of Correlation		
Series Correlated	One Year Previous	Concurrent	One Year Lag
Wages and wholesale prices (Sauerbeck)	+.47	+.71	−.25
Retail prices and wholesale prices	+.39	+.07	−.02
Retail prices and wages	+.38	+.18	−.23
Wholesale prices and wages	−.25	+.71	+.47
American wages and English wages		+.49	

Series	Standard Deviations (First Differences)
Wholesale prices	5.1
Retail prices	2.7
English wages	2.2
American wages	2.2

In striking contrast to the American results, the present inquiry discloses the fact that, in point of time, English wages move in close harmony with wholesale prices (+.71), while retail prices show but a slight degree of similarity in their fluctuations (+.07). Both series show a moderate degree of correlation with wholesale prices for the previous year. Again, wages agree more closely with retail prices for the following year (+.38) than for the previous year (−.23).

So far as the degree of fluctuation is concerned, it appears that wages do pursue a course far more even

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[1] Mitchell, Business Cycles, pp. 136 and 139. Mitchell points out that English wage statistics are less reliable than the American data in that " while agriculture and coal-mining are included, the manufacturing industries are by no means so well represented " as in the American figures.

(2.2) than do prices at wholesale (5.1); and when compared with retail prices the difference is less marked (2.7).

VI

We may now conclude and summarize.

It is clear from this analysis — which rests, be it remembered, on annual data — that the prices of consumers' goods at retail do not lag behind the same goods at wholesale in the manner indicated by Mitchell, but move concurrently with slightly differing ranges of fluctuation. Producers' goods, further, exhibit a wider range of fluctuation than consumers' goods even at wholesale. But an examination of the monthly as well as of the annual figures does not enable one to confirm Mitchell's assertion that "within short periods as within long the prices of producers' goods appear to be decidedly more sensitive than the prices of consumers' goods to alterations in business conditions." We must turn to quarterly series, constructed from the monthly figures 1907–1910 inclusive, which, tho inadequate, constitute the only available evidence that the prices of consumers' and producers' goods do move in the manner indicated by Mitchell. Even here the evidence is not unmistakable.

The sensitiveness[1] of prices of commodities to business conditions does not appear to be a function of the proximity to or remoteness from the raw state. A comparison of the annual figures of twenty pairs of raw materials and their manufactured products, as well as five triplets of raw materials, their half-finished and finished products, reveals neither a lag of half-finished products behind raw materials, nor a lag of finished products behind half-finished goods or raw materials. The removal of raw materials from the producers' goods does not alter the results. Coefficients of variability, ranging from 8.45 in the case of consumers' goods to 10.98 in the case of producers' manufactured commodities, and to 15.87 in the case of raw materials, harmonize with Mitchell's interpretation, and lend support to Carver's theory that crises arise from the dissimilar price fluctuations of producers' and consumers' goods. That the prices of producers' goods do not characteristically move earlier in point of time than those of consumers' commodities is evidenced by the high degree of concurrent correlation of the three series with each other.

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[1] The word "sensitive" is used here to mean both quickness and magnitude of fluctuations.

The author's conclusions as to Sombart's theory need qualification. The annual figures paired concurrently show that mineral, forest, and animal products move together, and that these movements are reflected one year later in farm products. Animal products, however, agree more closely with forest and farm products than with minerals. The results indicate that forest products still remain a good index of business conditions, notwithstanding the limitations of supply and conditions of monopoly existing in the industry.

It is obvious that Mitchell is correct in asserting that American wages show a stability superior to both retail and wholesale prices. But, contrary to Mitchell, wages in the British Isles exhibit much the same range of fluctuation as those in the United States. In point of time English wages display a more intimate relation to wholesale prices, and join these in preceding prices at retail; while all three of the American series move together. This difference in the relation of wages to business conditions may be due, not to irregularity or incompleteness of the figures, but to the influence of trade unionism or to a significant difference in the industrial and commercial conditions in the two countries.

The present analysis thus supports Mitchell in some of his conclusions. In many others the results appear to be inconclusive, and in some cases even contradictory. Probably the safest and most important conclusion of this study is this: annual figures do not suffice. Annual data are open to question because of their non-homogeneous content. For instance, the year 1907 witnessed a period of considerable business activity followed by feverish activity, then collapse and depression; 1908, depression in the beginning and revival in the later months. To unite the figures for the earlier and later months of such years serves not to clarify but to confuse any study of these short-time phenomena. Since a study of crises is perforce a study of these short-time movements, the results are vitiated in the measure that these heterogeneous elements are merged in annual figures. While the lag is in some cases a year, in other cases it is obviously not a year, but some shorter period.[1] The use of annual figures is legitimate as a preliminary step, but not as a basis for final conclusions. It is my conviction that reliable results can be obtained only by a resort to quarterly or monthly data, preferably the former. Mitchell's work marks an epoch. But his study merely points the way. The task yet remains for some one with time and patience to dig out the appropriate data and to continue with more refined methods the inquiry so well begun.

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[1] This view is substantially that expressed by Professor O. M. W. Sprague in a recent review of Mitchell's Business Cycles. "When the investigator is concerned with broad general tendencies over a long period of time annual figures serve the purpose. But in the case of the business cycle it is a series of changes which follow one another in rather quick succession that are to be measured." Journal of Political Economy, vol. xxiv, p. 609 (June, 1916).

TRADE UNIONISM IN THE IRON INDUSTRY: A DECADENT ORGANIZATION [1]

SUMMARY

I. Earlier history of the Amalgamated Association of Iron and Steel Workers, 674. — Its strength broken by the Homestead strike of 1892, 675. — Its policy suicidal, 676. — Gradually driven out of the Steel Corporation, 677. — II. The Association's annual agreements with the Western Bar Iron Association, 678. — III. Reasons for the continuing hold of the union, 681. — Dissension among the iron workers, 682. — The insurgent movements defeated, 682. — IV. Place of the Association in the sheet and tin plate industry, 686. — V. Its future dubious, 688.

I

Local unions were formed in the iron industry as early as the decade of the forties; but it was not until after the Civil War that they attained permanence of organization. By 1873 there were three national unions: the Sons of Vulcan, with a membership of 3331, was composed of puddlers and their helpers; the Associated Brotherhood of Iron and Steel Heaters, Rollers and Roughers, with a membership of 700, was composed of the skilled men in that branch of the industry; and the Iron and Steel Roll Hands of the United States, with a membership of 473, was composed of the semi-skilled men in the rolling crews, together with a few rollers and roughers.

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[1] The material for this study was collected while the writer was acting as special agent for the United States Commission on Industrial Relations. Grateful acknowledgment is made to union officials and to employers and their representatives who contributed information.

On the early history and policies of unions in the iron and steel industry, valuable material is in the following: Wright, C. D., The Amalgamated Association of Iron and Steel Workers; Quarterly Journal of Economics, vol. vii, pp. 400 ff.; Conditions of Employment in the Iron and Steel Industry, Senate Document no. 110, 62d Congress, 1st session, vol. iii, pp. 107 ff.; Fitch, J. A., The Steel Workers; and Fitch, J. A., Unionism in the Iron and Steel Industry, Political Science Quarterly, vol. xxiv, pp. 57 ff.

Inter-union jealousies and disputes weakened the bargaining power of each of these organizations. The recognition of this weakness brought about their consolidation in 1876 under the name of National Amalgamated Association of Iron and Steel Workers. The name was largely a misnomer, since nearly all of the members were iron workers. Steel production in the United States had not yet become an important part of the industry.[1]

In the Amalgamated Association, the Sons of Vulcan formed 85 per cent of the original membership and for a considerable time dominated its policies. From the first a sliding scale of wages, based upon fluctuations in the market price of iron, was established and maintained by the union. The success of the union in the iron industry was continuous and progressive during the first fifteen years of its existence and by 1890 nearly all mills signed its scale. Closed union shop was strictly adhered to in the unionized mills at this time. In the steel industry the union never gained the advantage it enjoyed in the iron industry and in its strongest years probably never controlled 50 per cent of the steel workers.

The high mark in membership in the Association was reached in 1891, when 24,068 were enrolled. Previous to this time there had been numerous strikes and in 1882–83 a series of disputes had resulted in a temporary loss of union strength. The Homestead strike of 1892 was the first blow to the union from which it did not fully recover. Membership dropped to 20,975 in 1892; to 13,613 in 1893; and to a probably overstated estimate of 10,000 in 1894. The Homestead strike almost disrupted the union in its steel connections and greatly weakened it in the iron mills.

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[1] During the years from 1860 to 1864 only about one per cent of the total production of pig iron was used in making steel. The crucible process had been introduced only a few years before and the "cementation" process was slow and expensive. Within the next five years both Bessemer and open-hearth steel were produced on a commercial scale. Yet during the first half of the seventies the total production of steel was less than one-tenth as great as that of puddled iron and did not equal it until the middle of the eighties. Since that time the production of iron has barely held its own, indeed has declined slightly; while the output of steel has increased steadily until now it is more than fourteen times as great as that of finished iron.

During the next decade the union steel workers hardly maintained the remnant of their strength left them at the close of this strike. At the same time the production of steel was increasing very rapidly. In its relation to the steel manufacturers the policy of the union was suicidal. Frequent changes were being made in the technique of the industry and with each improvement the union demanded the full advantage of the new machinery and tried to keep the ton rate of wages at the same level. At the same time the new improvements made possible the substitution of an increasing proportion of unskilled labor for skilled. The union did not organize these unskilled men and hence did not have their active support in labor disputes. Finally, the union limit of output, established at a time when the required number of heats took approximately twelve hours, was rigidly maintained even after improvements in machinery permitted a shortening of the day to ten hours. The union was unwilling either to increase the number of heats to make a full twelve hour day or to decrease its number to make an eight hour day and thus permit continuous operation of the mills.

Throughout the decade following the Homestead strike, the steel manufacturers temporized with the union, granting agreements for a part of their mills and operating others as non-union or open shops. In reality this was a mere subterfuge to prevent open conflict, since the union had but little direct influence upon wages in the steel industry. When consolidation became the order of the day in the steel industry in 1900, unionism revived for a time and the membership of the Amalgamated Association rose from 11,050 in 1899 to 14,035 in 1900. Thinking that the difficulties which the consolidation presented to the employers and the appeal to the investing public for the sale of securities would handicap the employers in wage bargaining, the union assumed its former aggressiveness and amended its constitution in 1900 as follows: " Should one mill in a combine or trust have a difficulty, all mills in said combine or trust shall cease work until such grievance is settled."

The United States Steel Corporation accepted this challenge of " all or none," refused to grant agreements for all its mills, and a strike resulted. The public support which the union expected did not materialize. Dissensions developed within the organization and the members in some mills refused to stay on strike. Furthermore, the predominance of non-union mills already running made the strike of comparatively little consequence to the Steel Corporation. Recognizing their defeat, the union proposed arbitration. This was refused by the Corporation. A little later the union accepted terms proposed by the Corporation which were much less advantageous than those offered at the beginning of the strike.

As a result of this strike the union suffered a loss in membership from 15,198 in 1902 to 10,904 in 1904. From 1902 to 1908 inclusive, the United States Steel Corporation continued to temporize with the Amalgamated Association, and by granting agreements for mills which were later dismantled or kept out of use it succeeded in so weakening the union in its mills that in 1908 only fourteen mills of the Corporation were unionized; and of these fourteen, two had been definitely abandoned. In 1909, in order to make the labor policy of the entire Corporation consistent, " open shop " was declared in these mills. A strike followed but was lost. The entire Steel Corporation has since been non-union.

II

The United States Steel Corporation has never been a producer of puddled iron. In this branch of the industry the Republic Iron and Steel Company at first operated most of the iron mills and bargained with the Amalgamated Association through the trade agreement system. Beginning as a producer of iron, this corporation has gradually dismantled and abandoned its iron mills until it has but two remaining. These two mills make agreements with the Amalgamated Association, or rather, they accept the agreements which the Association makes with the Western Bar Iron Association.

As the Republic Iron and Steel Company abandoned the production of iron, independent mills appeared to carry on the industry. Until 1906 the Amalgamated Association had made its yearly agreements with the Republic, and other union mills had accepted the scale so agreed upon. The Republic dealt with the union at this time through the company's labor commissioner, a man who had formerly been a trustee of the union. This commissioner has acted in a similar capacity for the other union mills since 1892. By 1906 the mills outside of the Republic controlled the manufacture of iron. Partly because of the necessity for dealing collectively with labor and partly because of their mutual interests in meeting the increasing competition with steel, twelve of these independents organized the Western Bar Iron Association and engaged the Republic's former labor commissioner as executive secretary.

In 1906 the new association made an agreement with the union which was practically a renewal of the existing agreement. These agreements, signed each year since, always represent a compromise between what the union asks and what the employers are at first willing to grant. In addition to the reasons which make this true of every trade agreement, special reasons apply here. The scale is in two parts — the base rate and the footnotes. There has been but little change in the base rates during the life of the agreement system. Changes in the footnotes are more frequent. Each year the officials of the union make a fight over the wording of a new agreement, even tho few changes are expected. A large number of footnotes are always asked for: first, in the hope that a few will be accepted by the employers at their face value or that some may pass through as "jokers"; and second, many are introduced for the purpose of display and prolonged discussion, even tho the union officials have no expectation of their acceptance. The members of the union at least are in this way impressed with the importance of their organization.

The agreement is in force for one year, from July 1 to June 30. The employers would prefer a long-term agreement — three to five years — since in the history of the agreement system there have been no long periods of decreasing wages and since they feel that more settled conditions would obtain under a long-term agreement. The union officials prefer a one year agreement as the only practicable means of holding the union intact.

At the time of the formation of the Western Bar Iron Association, the agreements provided a plan of arbitration in case conciliation failed at any time. But both employers and union feared to put the plan to a test and in 1909 it was abandoned. The agreements since that time have provided that there shall be no cessations of work until after an investigation of grievances shall have been made. All grievances are settled by the secretary of the Western Bar Iron Association and the union officials.

It is understood that a wage conference will be called by July 1 of each year. In the event of failure to reach an agreement, the existing agreement continues in force for one month while the conference committee continues deliberations. A longer period than one month is provided if both parties consent. Previous to July 1, the union has its annual meeting and draws up a tentative scale for the guidance of its conference representatives. The representatives, however, are not bound by this tentative scale. These are twenty in number, five chosen by the president of the union, from each of the four trades in the industry — boiling, finishing, sheet making, and tin making. The employers are represented by the secretary of the Western Bar Iron Association and a committee composed usually of one representative from each mill in the Association.

A few outsiders, both in the eastern field and in isolated districts, sign the scale adopted by the Western Bar Iron Association. Other outsiders operate non-union mills and little effort has been made recently to unionize them. In the East the conditions of production are such that less skill is required than in the West. Wages are correspondingly lower in the eastern mills. Preferential shop is the rule where the scale is in operation, altho even this is not guaranteed in the agreement.

The footnotes provide for direct limitation upon output, both as to the size of the heat and the number of heats. The number of heats per turn determines the length of the working day, which is usually ten to eleven hours. In addition, the footnotes fix the prices of "extras," determine minor issues such as shields on furnaces, top buggies, repairs, payment for lost time and for spoiled materials. The footnotes also prescribe the number of helpers in some branches of the industry and the source of their wages; the number of rollers to be employed in each mill; the proportion of helpers' wages to those of skilled men, and so on.

In a sense, the men covered by the agreement include the foremen. For example, the muck roller is a sort of contractor and hires his night roller and all helpers. This is true also in other branches of the industry.

There is no regular system of apprenticeship in the iron industry. The industry is scarcely maintaining its annual production in competition with steel and hence does not require an increasing supply of skilled men. When a man drops out of a skilled job a series of promotions follows until the man at the bottom moves from his unskilled work into a semi-skilled job. As will be shown later, the union gives attention to him for the first time when this promotion is granted him. The mill superintendent usually controls promotions, tho he sometimes consults with or receives suggestions from the union men.

III

In the face of complete non-unionism in the steel industry and even in the iron mills in the East, the Amalgamated Association, nevertheless, is able to maintain its agreements with the Western Bar Iron Association for very definite reasons. While the technique of steel production has experienced revolutionary changes and is still undergoing such changes, all of which make possible the use of unskilled and recently arrived immigrants, the iron industry has experienced practically no change in technique in forty years; because, it is said, no inventions have as yet been found practicable to do for iron what has been done for steel in making the latter primarily a machine product. Hence practically the same proportion of skilled men is present in the iron industry as was required two generations ago. Furthermore, there is an absence of concentration of capital in the iron industry and only one corporation in the Western Bar Iron Association operates more than one mill. Finally, only a relatively small part of the employees in the industry are protected by agreements, and these few are the most indispensable men in the industry. English speaking men still hold the skilled jobs. Not over 25 per cent of the total force in the union mills are members of the Amalgamated Association and not over 35 per cent are covered by the agreements. While others have been eligible to membership since 1889, theoretically at least, they have been practically excluded. Attempts to unionize the 65 per cent not covered by the agreements into separate organizations have usually been frowned upon by officials of the Amalgamated Association, so that the union has in reality been a great aid to the employers in keeping down the radical element in the industry.

In addition to the ever-present minority of such radicals, there have been four distinct organized movements to democratize the Amalgamated Association within recent years, all of which have been defeated by a combination of the conservatives in the union and their employers. In 1907 some of the puddlers withdrew from the union and formed a separate organization which they called the Sons of Vulcan. They claimed that they were not receiving sufficient attention from the more highly skilled members of the union. For a time they were unable to gain sufficient strength to force recognition from their employers, but they finally secured a number of flat-rate agreements to supplant the sliding scale of the Amalgamated Association. As soon as prices fell so that the sliding scale of the older union was more advantageous to the employers, a combination of employers and the older union was effected by which the Sons of Vulcan was disrupted in one mill after another. Since then many of the members of the disrupted union have returned to the Amalgamated Association.

In 1908 the president of the union listened to the wishes of the growing minority and announced a "New Policy," involving a more democratic organization of the men in the mills. This too was defeated by the conservative members of the union. The new policy involved the substitution of mill scales for the existing general scale. This may have helped to defeat it.

During the convention year from June, 1912 to June, 1913, two insurgent movements among the wage earners in the iron industry took definite form. One, styled the Progressive Movement of the Amalgamated Association of Iron, Steel and Tin Workers, was an attempt to place the control of the Association in the hands of the then democratic minority and to reorganize it as an industrial union. It was avowedly a movement within the parent organization and not a secession from it. Its declaration of principles was significant, and the essential passages are given below.[1]

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[1] First, We believe in industrial unionism:

(a) Because the manufacturers of iron and steel from mine to finished product are organized industrially to fight organized labor.

(b) Because our present form of organization as a craft of skilled workers cannot meet the present industrial concentration and fight to win. . . .

Second, We believe in the initiative and referendum and the right of recall:

(a) Because our present undemocratic form of organization centralizes too much power and responsibility in the hands of a few, which permits that few to become absolute dictators.

(b) Because when the responsibility of control and management of the internal affairs of the organization are placed in the hands of all the members that responsi-

Fearing to test the strength of this Progressive Movement in the convention of 1913, the national officials took advantage of a technicality in an amendment to the constitution and declared that the usual annual election would not be held but that the existing officials would hold office for another year. By the following year the zeal of the Progressives was considerably chilled. This insurgent minority still exists and has forced some concessions from the conservatives, such as the election of officers by referendum vote; but it has not yet succeeded in making an industrial union of the Amalgamated Association.

The second insurgent movement, contemporaneous with the one above described, took the form of a secession from the Amalgamated Association. Altho originating in the sheet and tin industry, its founders expected to extend it to every branch of the iron and steel industry. The manifesto of this organization is also significant.[1] After an analysis of the relation of employer

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bility will reflect itself in better understanding and in the diffusion of knowledge and education. . . .

Third, We believe that the organization should make changes in the national official force, not because of personal or individual animosity, but because such changes are imperatively needed:

(a) Because the present national officers have nothing to offer to meet the situation that confronts the organization.

(b) Because the present officials have opposed and hindered all progressive changes and measures, and have not advanced any new ideas or policies to meet the situation.

(c) Because the present national officials have failed absolutely to retain the confidence and approval of the rank and file of the membership, and the men who work in the open shops and the non-union mills.

. . . .

Sixth, We are opposed to the dual organizations known as the Industrial Workers of the World and the Sons of Vulcan:

(a) Because in the case of the former, we believe that the Amalgamated Association principles and policies can be changed within the organization to conform to the basic principles of the I. W. W., which is industrial and class solidarity, and that is what the Progressives in the Amalgamated Association are urging and agitating for.

(b) Because the Sons of Vulcan form of organization is obsolete, and its only strength is derived through the Amalgamated Association, and because such dual organizations are used as a club to break the strongest organization by the manufacturers. . . .

[1] It reads in part as follows:

To the workers of the iron and steel industry:

We, the workers of the sheet and tin industries of Niles, Ohio, have pulled away from the Amalgamated Association of Iron, Steel and Tin Workers, and have formed a and employee under the existing economic system, it declares for direct action as the means of securing justice to all men employed in the industry. The new organization, suiting its actions to its words, actually began a campaign of direct action by walking out of three mills at Niles. Through the coöperation of the Amalgamated Association, the employers were able to start their mills again and to break up, for the time at least, the Industrial Iron and Steel Workers of America.

The fear of the recurrence of such movements as this organization started, and as the Progressive Movement above described had planned, is a continuing source of strength to the conservatives in the Amalgamated Association. Some employers frankly admit that they consider an agreement with the Amalgamated Association, covering a relatively small percentage of their employees and these the most indispensable, as a sort of insurance against a more democratic union which might force terms for all men in the mills.

In addition to this negative influence of the Amalgamated Association, its conservative policy makes a positive appeal to the employers in the bar iron industry. The supply of highly skilled men in the industry is relatively small and it is advantageous to keep this supply in a mood to be satisfied with the conditions of work. This is especially true since in practice the agreements are very flexible. For example, in a dull

new organization, known as the Industrial Iron and Steel Workers of America, composed practically of all workmen working in or about said industries, with one single exception — that is the rollers.

The object of resorting to such stringent measures (that is, denying the rollers admission into our movement) is simply because our past and present experience (which is the groundwork of all knowledge) has revealed this truth, that the majority of them are devoid of principle; further reasons for taking this stand against the rollers are, because the position their selfish desires have placed them in possession of, has made cowards, traitors, and even strike-breakers of them, and by their attitude and disposition, which has been made manifest, it is a clear revelation that they are (with no question for doubt) devoid of the true moral courage deemed necessary to coöperate with a movement which tends to remove the burdens of oppression.

season, when work is scarce and laborers are plentiful, the union is not too insistent upon the enforcement of all footnotes. This amounts in some cases to the equivalent of wage reductions for such seasons, even below what the agreement provides for specifically.

Finally, the secretary of the Western Bar Iron Association undoubtedly plays a large part in the continuance of the agreement system in the iron industry. Having been at one time a national trustee of the Amalgamated Association, he knows the union as well as the association which employs him. He acts as a sort of buffer between the opposing interests. He is trusted by both union men and employers, and hence is able to take a more or less neutral stand between the radicals of both parties. In short, when disputes arise, he acts more as judge than as attorney for either the plaintiff or the defendent.

IV

In the sheet and tin plate industry the Amalgamated Association is tolerated by some of the independent mills, but it has ceased to be an active factor in wage bargaining. In the first place, the American Sheet and Tin Plate Company, by producing approximately 40 per cent of the total output of sheet and 60 per cent of the output of tin plate, controls wages in the industry. In the second place, but 22 per cent of the sheet mills and 11 per cent of the tin plate mills are unionized. Then too, the manufacture of tin plates is a tariff fostered industry and wages are affected by changes in the tariff. In fact, the relation between union wages on the one hand, and the tariff and the American Sheet and Tin Plate Company's wages on the other, is so close that altho wage scales are signed for one year in the union sheet and tin plate mills, it is understood that if the American should cut its wages or if an unfavorable change is made in the tariff, a new wage conference may be demanded within the year.

Hence, in general, American Sheet and Tin Plate wages determine union wages in the independent unionized mills. The American tolerates no footnotes but its base rate is correspondingly higher than the base rate in the union scale. Non-union independent mills pay a little less than the American and the union mills, but as a rule they do a lower grade of work and use less skilled men. Many of the unionized independent mills are specialty mills and are willing to deal with the Amalgamated Association in order to secure the services of the more highly skilled men represented in the Association.

The policy of the union in dealing with the sheet and tin plate manufacturers is essentially the same as that outlined in the discussion of the agreements with the Western Bar Iron Association. The sheet and tin plate manufacturers secure the same protection against the formation of an industrial union and the same assurance of the continued good will of their highly skilled workmen.

Unlike the bar iron industry, the sheet and tin plate industry has no definite association of manufacturers organized for the purpose of dealing collectively with labor. An organization known as the Association of Sheet and Tin Plate Manufacturers, representing one hundred and seventy-four sheet mills and seventeen tin plate mills, gives attention to such matters as credits, spelter prices, and trade conditions, but it does not deal with labor directly. Some of its members operate union mills, while others do not deal with the union. Manufacturers having ninety-eight sheet mills and fifty tin plate mills send representatives to deal with the union each year. But the agreements which the conferences frame are binding only upon those manufacturers who sign the scale as individuals.

V

The future of the Amalgamated Association of Iron, Steel, and Tin Workers is hard to foresee. Many of the highly skilled men, even in the union mills and working under the protection of trade agreements, are indifferent toward the organization and refuse to keep up their membership. Some interest is maintained by the union officials by a pretense at struggle and victory in making agreements, when no real contest with employers exists.

But it does not appear that the union is able to control the recruits to its trades. The men who now perform the unskilled labor in these industries, and from whom the future skilled men must be selected, are largely southern Europeans, whose allegiance to craft union principles has not yet been generally demonstrated. At present these workers are entirely ignored by the skilled members of the union. The American Federation of Labor has organized a few of these unskilled men into locals affiliated directly with the Federation. No general organization even along these lines has been attempted. The officials of the Amalgamated Association are inclined to favor the organization of the unskilled workers according to the plans laid down by the A. F. of L.; but they are unwilling to commit themselves to the policy of taking over these locals later and making them a part of the Amalgamated Association.

In the non-union shops and in the mills of the American Sheet and Tin Plate Company, southern Europeans are rapidly displacing the American born and the representatives of the older immigration in the semi-skilled and even in the skilled branches of the industry. A shift of such men from non-union mills to those that are now unionized would be an easy task. The same conditions exist in the bar iron mills, tho perhaps in a somewhat lesser degree than in the sheet and tin plate mills.

In other words, it is not quite clear how the Amalgamated Association can retain even its present limited strength for another generation. And to become a real force in the industry, very radical changes are imperative. The conservatives now in control of the union are trying to maintain a form of organization which is obsolete. In an industry where the employers set the standards for effectiveness of the forces of organized capital, labor cannot hope to safeguard its interests by the weak protests of old-line craft unionism. As already indicated, the Amalgamated Association has ceased to be an effective factor in wage bargaining in the iron and steel industry. Instead, its existence in its present form bars the way to the creation of a stronger and more inclusive industrial union.

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GENERAL INTELLIGENCE AND WAGES[1]

SUMMARY

Unsatisfactory discussion of the subject by economists, 690. — The Binet tests of general intelligence, 691. — Applications in educational psychology, 692. — Application to relation between intelligence and earnings, 694. — Large possibilities of the method, 697. — Need of separating tests of intelligence from those testing environment and schooling, 698. — Vocational guidance, 701. — Conclusion, 703.

Much as has been written on "differences of wages" and their relation to intelligence and ability, the discussion of the subject by economists has been far from satisfactory. The early writers, beginning with Adam Smith, were not disposed to give much weight to general intelligence. Later writers, notably J. S. Mill, gradually recognized general intelligence to be important in affecting the productiveness of labor. Others of still later date, such as F. A. Walker, suggested that general intelligence might affect either the general level of wages or differences in wages; and, finally, some recent writers find a tendency for wages to be adjusted, other things equal, to differences of efficiency, ability, or intelligence.[2] In all of this discussion the chief difficulties have been the lack of a clear definition of ability or intelligence, and the absence of a method of measurement independent of wages or success.

The unsatisfactory character of the opinions of the early writers is due in part to their vague conception of the relation of heredity and environment to ability. Proximately it may be true that skill and training are the important factors in determining wages; but skill and training may presuppose general intelligence. Even Mill believed that intelligence could be diffused by education. A clear concept of intelligence in the modern view is found for the first time in Walker; but he also believed that intelligence could be gradually developed in a community as a result of long continued popular education. Taussig points specifically to the question of the origin of general intelligence: "it is not possessed by savages; it is a slowly acquired quality of civilized man."[1] Early writers were perhaps misled by inferring from the development of intelligence with age the supposed corollary that it was developed by education. We are less concerned in this paper, however, with the correctness of theories of its origin and causation than with the clear definition and measurement of intelligence.

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[1] The writer takes pleasure in acknowledging his indebtedness to Mr. Donald G. Paterson of the University of Kansas for valuable suggestions and criticisms especially on the psychological aspects of this paper.

[2] Cf. H. L. Moore, Laws of Wages, chap. 4, and a criticism by the present writer, in this Journal, vol. xxvi, p. 787.

The problem of the measurement of intelligence arose as a problem of educational psychology. How could the work of the teacher be properly measured? Were there differences in the abilities of children or were all differences due to differences in environment, training, and experience? The study of the feeble-minded gave a clue as to the importance of heredity in determining mental endowment. The problem of the measurement of intelligence attracted the attention of Binet, a French psychologist; he was commissioned in 1903 by the French government to select the backward children for special instruction. He found he had to work out a series of mental tests to determine what children were backward. Various measures had been devised to test this or that special mental characteristic or specific capacity. By an average of a series of tests, Binet suggested, a measure of *general intelligence* could be developed. The problem then was to determine what the child ought to be able to do at the various ages. This difficulty was surmounted by giving the tests selected to large numbers of children of each age, and finding from the experience of a large number of cases what the average child of each age could perform. If then a child of ten was examined and found to be able to perform only as much as an average child of six, he was termed feeble-minded, or intellectually deficient.

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[1] Principles, vol. i, p. 101.

Some modifications have been found to be necessary in the Binet tests. The Stanford revision made changes in procedure that resulted in correction of mental age of very young children and of children over ten. Both of these, the Binet tests and the Stanford revision, rate by mental age. Lately other methods of rating have been suggested. Terman suggests the use of intelligence quotients: the index computed compares a given individual with the median performance of a person of the same age. A score of 100 for a child of nine means that the child does as well as the median for that age; a score of 120 means that the child's score is 20 per cent above that made by the median child.[1] The Yerkes' point scale finds a single number representing the child's score; it can be compared to scores made by large numbers of other children of the same or different ages.[2] Another modification suggested by Pintner and Paterson is to rate children in terms of the distributions of children of the same age. A child of nine is rated for example as among the lowest 3 per cent or as a "twenty-five percentile" of the children of that age.[3] These tests have been applied also to adults. Adults with a mental age of ten years or less are termed feeble-minded.[1] Unemployed men have been tested; lately attempts have been made to secure standards for college men, for University instructors, for children of the white, Negro and Indian races, and for children of different social status.

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[1] Terman, L. M., The Measurement of Intelligence (1916).

[2] Yerkes, R. M., Bridges, J. W. and Hardwick, R. A Point Scale for Measuring Mental Ability (1915).

[3] Pintner, R. and Paterson, D. G. "A Psychological Basis for the Diagnosis of Feeble-mindedness," Journal of Criminology, vol. vii, pp. 32–55 (May, 1916).

These tests of intelligence are not the same as informational tests. The latter are based on school subjects and are designed to test the amount of school knowledge the child has acquired. Some of the more widely used educational tests are the Courtis arithmetic test, the Trabue language scales, the Harvard-Newton composition scale, and the Ayres' writing and spelling scales. They may throw light on the quality of the teaching and the value of the pedagogical methods used. A student in the eighth grade may be able to answer questions based on American history that he has just completed. But a boy who has had no schooling whatever may be shown to have equal mental ability in an intelligence test. The literacy test for immigrants is properly speaking not a test of mental ability or capacity but merely of educational opportunity. In general it requires a certain level of intelligence to pass satisfactorily the eighth grade of school or to graduate from the high school.[2] Evidence of school accomplishment may therefore be used as evidence of a corresponding minimum degree of intelligence — except in so far as backward children are promoted beyond their deserts; but the fact that a person has dropped out of school, tho frequently due to mental deficiency, is not proof of it.

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[1] The delimitation of the term "feeble-minded" is still a controversial matter. Gilliland gives a good summary of the various methods of diagnosis, with bibliography. Gilliland, A. R., "The Diagnosis of Feeble-Mindedness," Journal of Delinquency, vol. ii, pp. 22–25 (January, 1917).

[2] Terman, L. M., The Measurement of Intelligence, pp. 93, 94.

These tests are fairly reliable. Ratings of children examined by different trained workers do not vary to any considerable extent.[1] Three hundred and fifty-two feeble-minded children tested three times at intervals of a year show practically no variation in mental age. Normal children tested at different times, 464 tested by Goddard and 83 by Bobertag, show nearly the same relative rank, tho all show progress in mental development.[2] Criticisms of some of the tests have been made that they show the influence of environmental factors rather than native intelligence. The tests criticized have been eliminated in the newer methods of measuring intelligence. For present purposes the intelligence tests may be accepted as accurate measures of native endowment.[3]

The tests thus developed by the psychologists may be used to measure differences of general intelligence among wage-earners and individuals of all social classes. We have for the first time a measure of ability that is independent of reward. By correlating wages with intelligence, we shall be able to test the theory that wages are paid in proportion to intelligence. Further, and perhaps of greater significance, we shall be able to investigate the working of our present industrial system. Does our industrial order succeed in selecting the best fitted and ablest to fill its most responsible positions, or is its method an arbitrary and haphazard empiricism? The use of intelligence tests to find correlations with wages, unemployment, choice of occupation, accidents, and many other factors offers great possibilities for drawing definite, significant, and practical economic conclusions.

[1] Kohs, S. C., "The Binet Test and the Training of Teachers," in the Training School Bulletin, pp. 113–17 (1914).

[2] Terman, L. M., The Measurement of Intelligence, pp. 112–13. Cf. chap. 7.

[3] See infra, p. 695–701.

A few studies of the relation between intelligence and earnings have been made already. Tests to determine general intelligence were applied recently to thirty applicants for positions of policeman and fireman in Los Angeles.[1] The tests were in charge of Professor Terman. In the investigation the facts as to salary received just prior to the examination were secured and correlated with the intelligence quotient obtained. A fairly high correlation, r = +.61 (±.078) was found between wages received and mental age. This correlation was higher than for any other factors correlated, being much higher, for example, than for spelling, handwriting, arithmetical reasoning. One of the applicants was found to be feeble-minded: he had been given a position on the force as an "extra" under the old political régime. Three others who had been appointed as "extras" were rejected without further consideration, having intelligence quotients that indicated "intellectual feebleness!" None of the applicants had completed a high school education. The investigator mentions the fact that California teachers would reach in general a much higher level of intelligence than the successful candidates for the position of fireman, tho the average wage would probably be much lower. A comparison of intelligence quotients with the impression gained by general appearance, etc., showed that one Irishman was rated much higher on appearance and social affability than his intelligence warranted.

Dr. Helen T. Woolley, Director of the Cincinnati Vocation Bureau, has made extensive tests on working children. Mental tests of children who left school and commenced work indicated that they were mentally inferior to those who continued in school. Among children who left school after the fifth, sixth, and seventh grades, no differences were found in wages received corresponding to presumed differences in mental ability; but investigation did prove that those who dropped out earlier and who showed a lower mental capacity on being tested, found difficulty in keeping their positions. The less intelligent formed a shifting class of labor.[1] An interesting sex difference was discovered. The less well endowed of the boys had the poorer and less well paid jobs: for boys of fourteen the median wage was $3.75 for the group that "failed worst," as compared to $4.10 for the group that did best; for boys of fifteen the medians were $4.75 and $5.62 respectively. Among the girls the opposite was true. For those who stood lowest in the mental tests the median wage at fourteen was $3.40 as compared to $2.85 for those who stood highest; at fifteen, $4.87 and $4.43 respectively. Dr. Woolley explains the difference by the preference of the girls for the department store work, which, tho requiring greater capacity, is more poorly paid than work in the shoe factories.[2] The figures indicate that in fixing wages, employers give greater weight to age and experience than to general intelligence in case of children just commencing work.

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[1] Terman, L. M., "A Trial of Mental and Pedagogical Tests in a Civil Service Examination for Policemen and Firemen," *Journal of Applied Psychology*, vol. i, pp. 16–27 (1917).

An elaborate series of tests of intelligence made upon two groups, one a group of seventeen professors and advanced students at Columbia University and the other composed mostly of unemployed and charity cases showed great differences in intelligence, which corresponded to the differences in earning capacity.[3]

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[1] Woolley, H. T., "The Issuing of Working Permits and Its Bearing on Other School Problems," School and Society, vol. i, pp. 726–33, especially p. 731 (May 22, 1915).

[2] Woolley, H. T., "A New Scale of Mental and Physical Measurements for Adolescents, and Some of Its Uses," Journal of Educational Psychology (November, 1915), pp. 12, 13.

[3] Simpson, B. R., "Correlation of Mental Abilities," Teachers College, Columbia University, Contributions to Education, No. 53, pp. 5, 6, 67–75.

A series of tests of ability to follow printed directions was given to hearing children, to business college students, and to a number of unemployed. The time required to complete the tests was lowest for the business college students, average 84 seconds; highest for the unemployed, average 309 seconds; and varied for children of different ages from nine to sixteen from an average of 178 seconds for children aged ten to an average of 123 for the sixteen-year-olds.[1] The unemployed required much more time to complete the test than the other classes, and in addition made a greater number of errors.

These studies are suggestive of the possibilities of the method of investigation. They offer a method of isolating the various factors that make up the personal qualities of labor and of correlating them with wages and other economic facts. It may prove possible to distinguish clearly and in quantitative terms the relative importance of native ability and of training and education in determining differences in wages. The results may enable the economists to discard the vague and unsatisfactory terminology of character description and permit them to substitute in place of it definite and quantitatively measurable intellectual traits. Such a step will be in line with that taken by criminology, of discarding the old, vague explanations of crime in terms of temptation and evil spirits, and testing mental condition. Pedagogy, in the treatment of backward and exceptionally bright children, is beginning to recognize the importance of native intellectual endowment or lack of endowment. Personal qualities have frequently been pointed out as a cause of unemployment of certain individuals: it may be possible to correlate unemployment in individuals with a low level of general intelligence.

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[1] Pintner, R. and Paterson, D. G., "The Ability of Deaf and Hearing Children to Follow Printed Directions," Pedagogical Seminary, vol. xxiii, pp. 477–97 (December, 1916).

Further, inquiry of this kind will throw an interesting light on the question of the influence of heredity and of environment in determining success. Is social classification based largely on ability or on privilege? Are the barriers between the non-competing groups of labor largely or entirely based on differences of ability? Such studies of intelligence and social class as have been made indicate that the brighter children are drawn almost wholly from the higher social classes. Terman states that out of 476 unselected children there was not a single one reaching an intelligence quotient of 120 whose social class was described as "below average."[1] Occasionally a child from poor surroundings may be found to be of superior intelligence, especially from among immigrant populations or populations where opportunity has not been free to all. A study of school children of Columbus, Ohio, by Bridges and Coler showed that the children of professional men, traveling salesmen, and proprietors had a mental age one to two years above the chronological age, while the children of skilled laborers had a mental age slightly less than the chronological, and the children of unskilled laborers were nearly a year retarded![2] Studies of the distribution of ability among unselected city children of Columbia, S. C., compared with children of a mill village showed that among the latter the proportion of backward children was much higher.[3] Mental tests of the capacities of Negro and white children indicate that among the Negro children the percentage of the intellectually subnormal is much larger and the proportion of bright children is much smaller than among the white.[3]

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[1] Terman, L. M., The Measurement of Intelligence, pp. 95, 117.

[2] Bridges, J. W. and Coler, L. E., "The Relation of Intelligence to Social Status," Psychological Review, vol. xxiv, pp. 28, 29 (1917).

[3] Strong, A. C., "Three Hundred Fifty White and Colored Children Measured by the Binet-Simon Measuring Scale of Intelligence: A Comparative Study," Pedagogical Seminary, vol. xx, pp. 485–515, especially pp. 501–03 (1913).

Similar studies made of Indian children at Mount Pleasant, Michigan, show that there are greater differences between the white and Indian than between the white and Negro: that the percentage of backward children is even greater among the Indians than among the Negroes.[1]

One serious criticism might be made of these conclusions. In measuring intelligence care must be taken to select tests which shall include only those really measuring native ability. Tests the results of which are affected by knowledge or environmental conditions, if applied to children of the same mental capacity but of different social conditions, will show differences that favor those who have better environment. If then a series of tests show differences in favor of children from better social environment, it is necessary to prove, before drawing a conclusion that the children of the better social class have greater intelligence, that the tests are tests really of intelligence and not of environmental factors.[2]

This question has been investigated by several writers. Stern shows that some tests are better than others for differentiating between intelligent and unintelligent normal children, between normal and feeble-minded children, and between different grades of feeble-minded. The same tests that showed the greater intellectual differentiation between normal and feeble-minded also revealed the greater differentiation of children by social status.[1] Pintner and Paterson have shown that the Binet tests of naming the days of the week (omitted in the revision of 1911 by Binet) and the months of the year are dependent upon experience. Both of these were considered as nine-year old tests, i. e., the average child of nine could pass them. Two groups of feeble-minded persons were taken, one with chronological ages of less than fifteen and the other of over fifteen; in the latter group a larger proportion of individuals of each mental age ranging from three to eight passed the test than passed among the first group at corresponding mental ages. "The results of the tabulation of these cases seem to point to the fact that as a feeble-minded person grows older his ability to pass these two tests increases."[2] In another paper they show that exactly opposite results are reached with the Cube test and with the Profile test. In this case feeble-minded adults over twenty-one who tested mentally at ages ranging from five to eleven showed lower capacity to perform these tests than children fourteen years of age or below testing at the corresponding mental age. The explanation is that the adults had been rated mentally too high because of the inclusion of some tests that involved experience in the determination of mental age,[3] but that these particular tests are really tests of intelligence.

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[1] Rowe, E. C., "Five Hundred Forty-Seven White and Two Hundred Sixty-Eight Indian Children Tested by the Binet-Simon Tests," Pedagogical Seminary, vol. xxi, pp. 454–48, especially 456, 458.

[2] For purposes of correlation with wages it does not so much matter if a few tests that measure knowledge or school training are included. For school training itself is probably correlated with general intelligence, and consequently a correlation of wages even with measures of school accomplishments would be a fair substitute for a direct correlation with measures of general intelligence. Fortunately, however, the evidence indicates that the tests really measure native ability.

The most significant evidence on the question is that given by Dr. Woolley. If tests made upon school children are tests of native ability, then differences in school grade of children of equal ability are probably due to and may be explained by differences in environment. But if the tests are tests of environmental factors no marked differences between the tests made and grade in school would be expected. Dr. Woolley says:

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[1] Stern, W., The Psychological Methods of Testing Intelligence, tr. by G. M. Whipple, pp. 97, 98 (1914).

[2] Pintner, R. and Paterson, D. G., "Experience and the Binet-Simon Tests," Psychological Clinic, vol. viii, pp. 197–200, especially 198 (December 15, 1914).

[3] Pintner, R. and Paterson, D. G., "The Factor of Experience in Intelligence Testing," ibid., vol. ix, pp. 44–50 (April 15, 1915).

> On this assumption we reasoned that the fourteen year old children whose tests showed good native ability, but who nevertheless had completed only the fifth grade, must have had unfortunate social circumstances which caused retardation in school, in spite of their superior endowment; while the group whose tests showed poor native ability, but who had nevertheless completed the eighth grade at fourteenth years, must have had favorable social surroundings which assisted them through school in spite of inferior endowment. In order to test this hypothesis, we looked up in our files the records of the physical and educational history, and of home conditions of these exceptional children. We found our hypothesis absolutely verified. . . . Of the well endowed children from the fifth grade, one had been retarded by illness. This child had a good home, and good parents, but she had had in the course of her fourteen years spinal meningitis, smallpox, typhoid fever, scarlet fever, measles, and several minor diseases. She is the only child in this group who had a good home. In other cases a father had been lost through death or desertion; in some the mother was a wage-earner outside the home; in most the family was constantly moving; in only two families was the father living, one a saloon-keeper, and the other an old clothes dealer. The social conditions of the poorly endowed children in the eighth grade was uniformly good. In practically all cases the father was the wage-earner; not one mother was a wage-earner outside the home. Over half of the families owned their homes, while none of the families with well endowed children in the fifth grade did. Most of the mothers were interested in education, and the children in most cases did not have to do any work out of school. "To find the apparent anomalies in the estimates made by the scale so uniformly explicable on social grounds is an important piece of evidence in favor of the reliability of the scale as a measure of native mental ability."[1]

Studies of general intelligence, if carried far enough, may offer a sound basis for vocational guidance. Mental tests may be made to determine the average degree of intelligence required of motormen, of ditch-diggers, of locomotive engineers. Dr. Woolley suggests that manual dexterity may or may not be correlated with intelligence, and that a study of relative aptitude for mental and manual work might be used for vocational guidance. A boy who was intellectually below par but who had some manual dexterity ought to be given industrial training. Education should be adapted to the capacities of the individual.[1] Pintner and Paterson, in a study of the language ability of deaf children, point out the poverty of their language attainments, very few reaching more than fourth grade ability. It follows as a corollary that education of the deaf ought to be directed along lines of manual or industrial training where they are relatively not seriously handicapped instead of into the study of languages and literatures like English and Latin, in which they are notably deficient.[2] Special aptitudes along special lines may be discovered by special tests. Whipple suggests, for example, auditory tests for telephone operators, tonal discrimination for children studying music, etc.[3] Most of these tests will permit only of negative conclusions: the general level of intelligence requisite for success in a given vocation may be determined, and persons without sufficient endowment of intelligence can be advised against undertaking employment where they will almost certainly fail.[4]

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[1] Woolley, H. T., "A New Scale of Mental and Physical Measurements for Adolescents, and Some of Its Uses," Journal of Educational Psychology, November, 1915, pp. 6–8. See also, Terman, The Measurement of Intelligence, chap. 7.

Mental tests will probably have wider application in the selecting of employees by employers. The best candidates among applicants for a position may be selected by means of tests of general intelligence. Progressive employers are looking for some method of selection that is not haphazard; if they have to give employees a course of training, as is true in many employments, such as telephone exchange or electrical work, they wish to be sure that they are not wasting the training on those who will not be able to do what is expected of them. Whether general intelligence tests are the best for a particular kind of work or employment can be determined only by experience. For some kinds of work it is possible that special tests would be better or that supplementary tests would be necessary. The value of these tests is that they are standardized and the results can therefore be better interpreted. Tests might be applied to all candidates for civil service positions; and it has been suggested that they might be of great value in selecting recruits for the army.

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[1] Woolley, H. T., A New Scale, p. 14.

[2] Pintner, R. and Paterson, D. G., "A Measurement of the Language Ability of Deaf Children," Psychological Review, vol xxiii, pp. 424–29.

[3] Whipple, G. M., "The Use of Mental Tests in Vocational Guidance," Annals of the American Academy of Political and Social Science, vol. lxv, pp. 193–204 (1916).

[4] Terman, L. M., The Measurement of Intelligence, p. 49.

It is doubtless premature to attempt a formulation of the relation of wages and intelligence on the basis of the meager evidence thus far available. Possibly it might run as follows. There is a tendency for wages in a given occupation to vary with the degree of intelligence; but in the early years of employment age and experience appear to have more weight. Occupations can be classified with reference to the amount of intelligence required. The supply of labor in many occupations is limited by the supply of labor of requisite intelligence available. Frequently there are strong preferences on the part of intelligent labor for particular kinds of work, and the wages in these desirable occupations are correspondingly reduced. These preferences may be revealed through correlations of intelligence and wages by occupation. Education and training may prove to be more directly correlated with wages than is general intelligence: but it is probable that the degree of education and training that can be taken with advantage is directly dependent upon native ability. Other personal qualities that still remain unmeasured — the moral traits of honesty, faithfulness, dependability, and personal habits that might affect the availability of men for special work — may possibly prove to be correlated with general intelligence. Differences in wages due to differences in health and physical efficiency, differences due to political and industrial privilege and "pull" may be more definitely measured after differences due to mental ability and training are eliminated.

Only a beginning has been made. We need more measurements and correlations of intelligence with various economic factors. We should keep in touch with the work of the psychologists in developing and applying these tests. We need to reëxamine and test our conclusions by a close study, aided by this new method of measurement of intelligence, of the facts and processes of our industrial life.

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REVIEW

KLEENE'S PROFIT AND WAGES[1]

This little volume may fail to receive from economists the attention which it deserves. It is unpretentious in size and in general plan; and plenitude of pages and elaborateness of plan are apt to go far in attracting notice and in establishing reputation. There is here no ostentation of erudition, yet abundant evidence of careful study and matured thinking. The incidental remarks on such writers as Landry, Schumpeter, Oppenheimer, Bortkiewicz and Graziani show that Professor Kleene has read widely and critically. It is perhaps significant that he does not give chapter and verse or even mention names when referring to the theories of English and American writers. This may be due to a modest reticence, possibly to a belief that every person who will look into his volume at all will be familiar with the literature of our tongue. No conversant economist will fail to see what doctrines and writers are discussed.

Professor Kleene's exposition throughout is brief, yet clear and straightforward, and his conclusions are stated with sufficient fulness. What is said in the introduction upon the methods of economic science, and more particularly on the methods applicable to theoretical inquiry, is excellent. There is also discriminating restraint on the significance of any inquiry on these topics; as Professor Kleene remarks (p. 107), a discussion of the theory of interest takes "only a small and inadequate view of the problem raised by socialism." The plan of the work, in brief, is to take up in a few introductory chapters, the general theories of interest now in vogue these being in order, Böhm-Bawerk's theory, the time preference theory, the abstinence theory and the productivity theory; then follow three chapters in which the author's own view of the case is presented; a concluding chapter gives a summary.

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[1] Profit and Wages. A Study in the Distribution of Income. By G. A. Kleene. New York, The MacMillan Co. Pp. iv, 171.

The critical treatment of the theories of others in the earlier chapters is excellently done. If one does not always agree, disagreement must be accompanied with respect for the acuteness and justice of the main criticisms. I am not sure that Böhm-Bawerk's theory of interest is a "unitary" theory. True, that scholar's reasoning proceeds mainly on the lines of our old friend, "technical superiority"; nevertheless, a sympathetic interpretation of his doctrines leads to our equally familiar friend, "preference for present goods," and warrants a more catholic statement of Böhm-Bawerk's views than his own exposition might justify. At all events, I doubt whether a sharp line of distinction can be drawn between Böhm-Bawerk's theory on the one hand, and the two rival theories of "time preference" and "productivity" on the other. His, after all, is a mixture of the two. So far as concerns "time preference," that notion does not seem to me so sharply distinguishable from the "abstinence theory" as Dr. Kleene maintains. The two are, after all, variants of the same fundamental conception. The specific productivity theory, which comes last in the critical exposition, is disposed of effectively, and indeed, has been so effectively criticized by other writers, of one school and another, as hardly to leave it an important place in the present stage of theoretical discussion.

To time preference, abstinence, and the like, Dr. Kleene concedes some influence on the accumulation of capital, but denies a dominating influence. There are indeed passages which seem to imply a more unqualified rejection of this notion: "the time preference theory is a remarkably consistent piece of theorizing and therein doubtless lies its great attraction. But it is spun out of nothing" (p. 53). Yet almost at once it is added that time preference may have an influence on saving, lending and borrowing. What Professor Kleene really denies is that the expectations, hopes and fears suggested by the phrase "are sufficiently definite and powerful to be given a place in a carefully formulated general theory of the rate of interest." And similarly Professor Kleene, while agreeing that the abstinence involved in saving is one among the factors that serve to explain the existence of interest, contends that it goes little way toward explaining the amount of interest received. So much doubtless is to be admitted. Perhaps, too, it is to be admitted that the marginal savers, or marginal savings, are relatively unimportant. Professor Kleene frankly says that in conclusions of this sort we can be guided only by our general impressions and it is on the basis of such impressions of his own that he argues well and strongly that abstinential marginal savings are relatively inconsiderable. On the other hand, he seems to me to go altogether too far in urging that great stores of capital are now made and maintained "without thought and effort," and that capital may almost be said to accumulate itself (p. 68). This comes perilously near to the doctrine which appears in Professor Clark's *Distribution of Wealth*, and which seems to me quite untenable — that capital maintains and perpetuates itself in some automatic way, quite independently of the owner's state of mind. The circumstance that a thing is habitually done, and done without immediate consciousness of the actuating motive, by no means proves that the habit would persist and the thing would continue to be done if the motive were removed. It is true that people *seem* to save and to maintain their accumulations intact, without thought and without intent, in quite mechanical fashion. Yet I take it that attentive reflection on their course of action under the conditions of entire absence of interest would make it clear that the maintenance of individual accumulation on any great scale would then be unlikely, indeed unthinkable.

Professor Kleene's own view, stated in the later parts of his book, may be described as a revised and revamped version of a revised and revamped wages fund theory. The revised form of the unpopular doctrine is that suggested by the writings of Böhm-Bawerk and apparently also by my own *Wages and Capital.* It gives me satisfaction to find that so acute a thinker as Professor Kleene accepts the general analysis which is contained in my volume, and is not afraid of the term "wages fund"; tho I am bound to say that this term now seems to me of doubtful expediency. The essentials of the explanation there given of the mechanism by which wages and profits are determined seem to me no less valid than they did a generation ago. Professor Kleene takes the same view, namely, that the proximate influence determining the general range of wages is the quasi-mechanical impact of total wages fund, or profit-seeking free funds, against the total supply of laborers. His independent contribution relates to the conditions under which the second item, the supply of laborers, is forthcoming. In general outline, as he expressly states, his doctrine is very similar to that of Ricardo and Ricardo's school — and of Marx also. It make no distinction between interest and business profits; it is concerned with "profit in the sense of a residual income remaining in the hands of the capitalist class as a whole after they have hired the laborers and secured whatever the laborers produce over and above the amount paid out to them." But as regards the factors which, in the long run, influence the supply of laborers and so the outcome of this special kind of bargaining, he introduces a modification. The Ricardian view, it will be remembered, was simple enough; the supply of laborers was determined by a fixed and probably low standard of living, and increased or decreased in such way that the laborers received in the long run the wages which their low standard of living called for. So much is still true, Professor Kleene maintains, in backward communities like those in Central Europe, or at least those parts of Central Europe not yet influenced by modern industrial conditions. Here the Malthusian view of "natural" wages still holds good. But in the capitalistic countries, like the United States, England, Germany, France, no such version of the case is tenable; and indeed no one would now say that the vital statistics of these countries confirm anything approaching this older doctrine. Yet Professor Kleene argues that a modified or revised application of it is still tenable. Wages in the United States are determined not indeed by any fixed standard of living among the American laborers, but — by the standard of living, the "natural" wages, of the immigrants who bring with them the standard of the backward parts of the old world. The specter of immigration and of a standard of living debased by immigration hovers in the background of Professor Kleene's picture almost as much as in that of some anti-immigration extremists. The general rate of wages in the United States, he believes, is determined fundamentally by the price of unskilled labor; and this in turn is determined fundamentally by the last considerable addition to the number of such laborers; and the supply price of these again is settled by conditions outside the capitalistic region itself. The wages of unskilled laborers in the United States are based on the standard of living in the countries whence the immigrants mainly come — Italy, Austro-Hungary, Russia, the Balkans; with a sort of differential or premium resulting from the expenses of immigration and perhaps the deterrent effect of distance and unfamiliarity.

I confess this seems to me untenable, or at all events, pushed quite too far. No doubt the general trend of wages in the United States has been greatly influenced by the large volume of immigration and by the increased supply of laborers due to immigration. But the rate can hardly be said to be fixed by an old world standard, even with a differential super-added. It would seem obvious that the reasoning is not applicable to countries like Germany and Great Britain. These also, according to Professor Kleene, have reached the stage where the Malthusian and Ricardian formula is not applicable to the supply of labor, as he thinks it is in the countries more to the eastward and southward. In Germany and Great Britain, according to Professor Kleene's own doctrine, we find capitalistic conditions essentially similar to those in the United States; and we find also no "natural" rate of wages. In these countries, since there is virtually no influx of immigration, there can be no determination of general wages by the imported standard of living among the immigrants. The special prominence of the problem of immigration in the United States causes this factor to loom up unduly in Professor Kleene's general explanation. His " supply price of labor " for the United States is by no means made out as satisfactorily as he would have us believe. After all, the outcome of his reasoning, for this country as for the others of " advanced " civilization, would seem to be that of an impassive unregulated impact. The settlement of wages and profit becomes simply a matter of the gathering accumulation of investment meeting the gathering number of laborers, with no ultimate determinant of wages or of profit and no " normal " return for either.

Perhaps some such agnostic doctrine as this is what we must come to. If we give up the notion of a regulating rate of " time-preference," or the similar one of a minimum return necessary to induce abstinence and saving, we have no "normal " rate of interest. And if we give up also the notion of any " natural " wages settled by a standard of living, what have we left ? Specific productivity cannot be demarcated; and the productivity of industry at large bears merely on the national dividend as a whole, not on its apportionment between the different factors of production. Nothing seems to be left but the Ricardo-Marx conception — this admittedly is Professor Kleene's — of a surplus, essentially fortuitous, grabbed by those who now control industry, and soon to be seized (the suggestion lies at hand) by those who are rapidly acquiring control.

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NOTES AND MEMORANDA

THE CONTENT OF THE VALUE CONCEPT

There has been a persistent endeavor among economists to establish unique definitions for their more important terms, and many seem to feel that success in this endeavor can alone justify the claim of economics to consideration as a science. An exact and uniform terminology is so characteristic of the experimental sciences that it is assumed that economists must needs do likewise. The diversity in the usage of the words value, capital, price, rent, interest, profits, is ruefully contemplated by nearly all; some still struggle against this seemingly unscientific lack of precision in essential abstract concepts and categories, others have already reconciled themselves to the difficulty and accepted these diversities as a necessary evil.

Judgment of this situation turns upon one's conception of the position of economics among the sciences. Other scientific investigations, whether in the physical or mental sciences, can impose arbitrary limitations which are of the utmost moment. A particular type of phenomenon is isolated and studied *as if* it were independent. No attempt is made to study reality in its entirety, and consequently an arbitrarily defined body of material is set off which can be treated according to rules laid down by the investigator. Terms and categories can be invented freely because the whole subject of research is itself an heroic abstraction. Economics, however, cannot follow a similar procedure, because arbitrary limitations cannot be established. All thinking imposes some isolation of the problems set for analysis, but in economics no particular limits have been permanently established. Interest in different problems set for given a great diversity to economic analysis; some writers desire to exclude by rigorous abstraction the problems which are of primary interest to another group. The field of investigation cannot be satisfactorily described in any terms that will meet with general accord among economists, and this impossibility of agreement as to the limits of the field destroys all hope of a universal terminology.

The economist must approach his linguistic problems more nearly in the spirit of the literateur and philosopher. It is not his business to invent technical terms. Like the artist or philosopher, he must discover new content in the ideas and emotions common to all. Few, if any, of the major concepts of economics are themselves new or unusual. Some vague meaning is conveyed by value, rent, interest, or capital, and, while many of these notions are seriously confused by popular fallacies, the economist in correcting the common sense notions really does no more than give adequate expression to things previously seen through a glass darkly. Furthermore, a moderate perusal of dictionaries and handbooks will show that economists have done no more than enlarge or restrict the content of meaning attached to these terms. Vague connotations have been analyzed with care and new aspects of meaning discovered.

Compare the citations under "value" in the *New English Dictionary* with the diversities familiar to any reader of economic treatises. Nothing could afford a clearer illustration of the enrichment of the meaning of this abstract term. The sophisticated economist finds much in this well worn concept that was not known to his forbears, and yet it would be unfortunate to presume, as many do, that there is no significant relation between his ideas and the naïve thinking of earlier generations: most unfortunate, to conclude that sophistication could properly become a means of narrowing the meaning of such a word and reducing the diversities of the older usage to the rigid formulation of a mathematical definition.

The task of arbiter of good usage is a thankless one, and dangerous withal. Both friends and enemies are prone to investigate the qualifications of the arbiter with a degree of care that is likely to prove embarrassing. It is therefore an act of wisdom to disclaim any intention of drawing up a classification of these meanings that shall pose as authoritative usage. It is intended merely to suggest that it may in the end prove more helpful if we as economists endeavor to establish some standards of good use for these diverse meanings and abandon the search for the unique and universal definition.

Beneath all the varieties of usage there lies one fundamental problem; whether we shall speak of this concept in a philosophical sense or follow a purely empirical policy. To the empiricist value is a fact or quality. Ruskin remarks that it is " the life-giving power of things." But this is surely bad. We live in worlds created by our thoughts and there is little defense for the attempt to evade the admission of human judgments into these matters of valuation. Values are attributed to things by men, and by reasonable logical method we may fairly describe them as judgments: judgments of desiredness, of scarcity, or judgments of some relation between wantedness and scarcity. The Austrians have taught us the doctrine of relativity, and, whatever their failings, it is no small achievement to have diverted attention from the search after that elusive essential quality in things which both classical economists and socialists thought of as a fact.

The term judgment connotes a deliberation of effort that is associated with the most persistent popular usages of the word " value." Beneath many diversities there lurks a notion that the value of a thing is what it is " really worth." It appears in the common antithesis between value and price: price is what you pay or what you get, value is what the article is really worth. The value judgment is presumed to be accurate. In the language of Adam Smith, every man is presumed intelligently to seek his best interest, and while it is sufficiently evident that the ideal is not attainable, there is clear disposition on the part of most writers to assume perfect competition and adequate intelligence. The value judgment is thus specifically characteristic of a sophisticated society, involving a degree of thinking about things that would be foreign to primitive peoples. In all its connotations, then, the term " value " suggests a society in which the material problems of life are given deliberate and thoughtful attention. It may be that some vague sense of the worth of objects is present among the most primitive peoples, but it is not to be assumed that they are concerned with values. In the course of much subjective analysis primitive peoples and barter economies are frequently drawn in question, but it would seem that many dangers are incurred by reading into primitive life ideas that are held with clearness only in a developed society. In fact, the entire validity of the position of the extreme subjectivists turns upon the validity of abstracting out of their illustrations the mechanism that is requisite to the sophisticated society whose ideas they seek to analyze.

The value judgment may be described, defined, or analyzed from a variety of points of view: in terms of the mode of expressing the judgment, in terms of purpose, in terms of the process by which the judgment is reached, and in terms of a presumed absolute measure of value. The analysis of the process of valuation is hardly older than the organized study of economics, but the meanings which are associated with the other points of view reach far back into the past and constitute a significant appeal for wide catholicity in the study of the usage of the word. With the exception of the last named of these modes of approach, meanings of value may be derived in each case that are valid for certain problems.

The search for an absolute measure of value, whether in utility, cost, or labor, is nearly, if not entirely, discredited at the present day. The notion of a normal price derived from such analysis still survives, but it is not easy to be certain that the notion plays any very significant part in our actual thinking. In the elementary texts it appears as one of the things that a beginner should know and then it disappears. It is hard to avoid the feeling that the whole discussion is sterile. Much of the old analysis, however, assumes a significant place in the discussion of the process of valuation and becomes exceedingly important in the reëstablishment of the mental poise so rudely shaken by the aggressive attack of the psychological school.

Controversies that have developed out of the analysis of the process of valuation, and the amount of space necessarily given to any careful description of the process, have tended to give the discussion of valuation an exaggerated place in the general theory of value. The purpose that lies behind a judgment is hardly less important than the process by which the judgment is reached, and yet there is usually little significant discussion of the purpose of the value judgment. The relative importance assigned to these points of view is practically the decisive factor in reaching an opinion as to the preponderance of individual choices or social purposes. If one feels that the process is the more significant basis of definition it is scarcely possible to resist the conclusion that the logical priority of subjective elements in valuation renders them more essential. Even if an objective exchange value is recognized, it is subordinated to the notion of subjective value, which is represented as more essential. The opposite view prevails if purpose seems more important than process. Value then appears to be primarily "a power in motivation," as Anderson says; a means of coördinating activities and of adjusting consumption to available supplies. It becomes significant therefore only in so far as it serves as a check upon individual caprice and serves definitely as a form of collective pressure upon the individual. A facile writer can easily make out a case for the essential importance of the objective purpose of the value judgment. Can we not deplore the persistence of controversy between subjectivists and objectivists? It has been a fruitless debate, in which the issues have never been squarely joined; resulting, nevertheless, in much careful analysis which leads to complementary rather than antagonistic conclusions. The subjective foundation of the process of valuation does not in any respect disprove or gainsay the objective significance of the achieved judgment.

The value concept has one other aspect which is perhaps derived directly from this motivating function or is perhaps merely a kindred notion: the value judgment is thought of as the norm or standard of the concrete price offers of daily life. This idea appears in a variety of distinct forms, and because of the implied antitheses with current prices many confusions can be traced to this source. The idea of a "just price" turns upon the assumption of the possibility of a more perfect correlation of factors in valuation than is currently achieved in society. The notion of "normal price" is little more than the medieval notion in a new garb: a more refined conception no doubt, but in essential features the same idea. The chief difference between the scholiast and the classical economist was the latter's faith in the effectiveness of unfettered competition.

The notion described by Jevons as "the perfect price" presents a distinctly new phase of the normative elements in the value concept. The "perfect price" is to be thought of in a moving equilibrium. The normal price must needs turn upon a correlation between actual prices and some supposedly essential measure of value, whether utility, cost, or labor. The perfect price merely implies that the higgling of the market takes place without any errors of judgment among buyers and sellers who have no illusions as to their wants and needs.

Monetary problems, particularly changes in general price level, bring up one more normative problem — that of the standard of deferred payments (closely akin to the old "ultimate standard of value"). In this connection the necessary abandonment of money as an intermediary seems to give us the most fundamental meaning of value and the most specific antithesis between value and price.

As concrete problems of usage we thus have the following meanings associated more or less advisedly with the word "value": exchange relations of any good for other goods; the perfect price; a power of motivation; a process of valuation sometimes described as a process of "price making," sometimes as a process of "value determination," and the obsolescent notion of a normal price. Linguistic difficulties are largely created by the vague line of demarcation between price and value.

The ambiguities in the usage of price and value with reference to the process of valuation can certainly be avoided, as some distinction can surely be drawn between the pure abstract discussion of the underlying principles of the process of valuation and the notably different problems of actual marketing. In the abstract discussion, perfect competition can be assumed, and even must be. It is of more moment to secure a complete description of the various factors in valuation than to measure their intensities. In the actual market, the essential task is precisely this judgment of relative intensities; nothing could be more unreal than the discussion of a supposed market in which all the facts are known and all the traders intelligent. The frequency with which the phrase price-making or its equivalent is applied to purely abstract discussions of valuation serves to conceal the incompleteness of a theory of valuation which does not even endeavor to deal with all the actualities of commercial life.

The serious confusion between value and price seems to arise largely from the disposition to believe that any exchange relation expressed in terms of money must needs be some kind of price. Hence, the persistent use of " price " without any qualifying adjective to indicate the sense of " perfect price." One of the most common instances of this usage occurs in the supposed axiom, " in a given market at a given time there can be only one price." The most cursory inspection of a ticker or of the produce exchange records is enough to reveal the inaccuracy of expression, and few texts are free from ingenious and devious attempts to evade the conclusion that is suggested by the discrepancy. The readiest solution of all these difficulties is the frank use of " value " to describe the idea of a " perfect price." This usage can be defended both on logical and upon historical grounds. Logically, it is merely one of two aspects of the normative meaning of value, and each of the two meanings has its legitimate place. The " perfect price " serves as the standard of current exchanges; whereas the idea of a standardization with reference to deferred payments is an expression of the need of a " perfect " monetary system. The two are different aspects of the same idea of a wholly accurate judgment of worth, and no abstract reasoning can make out a better case for the one meaning than for the other. Historically, the two meanings have always been present in the language since the fourteenth century. Tho the references cited in the *New English Dictionary* leave much to be desired, they seem to show a catholicity of usage among other writers in which economists might easily find a solution of many of their own difficulties.

The discoveries of new content in old concepts inevitably results in a temporary narrowing of interests and not infrequently in a certain loss of tolerance for interest in other aspects of the concept. The advance in analysis is secured only at the price of concentration upon special aspects of the general problem. These tendencies, so clear in religious and philosophical literature, are scarcely less evident in the rapid advance of economic thought in the past century. The specializations of interest appear in every part of the field. The problems of capital and rent, as well as the general problem of value, have gained from these enrichments of content, yet at the expense of catholicity of view and tolerance of the aspects of the general problem that appeal to other writers. It is hard at first to realize that the new thinking supplements the old instead of supplanting it. When one's mind is still concentrated on one particular analytical problem, it is hard to remember that the other fellow's problem is likewise a valid problem. But now that the intensity of controversy is subsiding, may we not hope for a new kind of interest; an interest that is concerned with general and comprehensive statement and not exclusively devoted to special analysis ?

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